The Department of Defense, federal government, and non-government agencies supported the work reported herein.

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(937) 255-3633
DSN 785-3633
afit.enrsta@afit.edu

or visit the AFIT website: www.afit.edu
Air Force Institute of Technology
Research Report 2002
Foreword

Research is the cornerstone of dramatic advances in air and space defense technology. The Graduate School of Engineering and Management at the Air Force Institute of Technology (AFIT) continues to provide responsive, defense focused graduate education and research to enable us to remain the world’s greatest air and space force. AFIT maintains partnerships with our Air Force’s organizations and operational communities, Department of Defense (DoD) agencies and premier graduate education institutions to meet the challenges of high quality academic and research programs.

Research experience is an essential element of a quality technical education, providing graduate students the necessary environment to keep on the forefront of the ongoing revolution in warfighting. In addition to delivering long-term educational advantages, AFIT strives to ensure that the research program provides immediate benefits to our air and space forces. AFIT cooperates with commercial enterprises to ensure timely transfer of new technology to US industry whenever appropriate. AFIT welcomes new opportunities to engage in research projects that are of mutual interest to our customers, faculty, and students.

This Research Report is prepared annually to report on the significant contributions of this institution, to solicit continued involvement and support from Air Force laboratories and DoD agencies, and to encourage new sponsors to participate in AFIT’s research program.

MICHAEL L. HEIL, Colonel, USAF
Commandant
Air Force Institute of Technology

ROBERT A. CALICO, JR.
Dean, Graduate School of Engineering and Management
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1. INTRODUCTION

1.1 OVERVIEW

This Research Report presents the FY02 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In nearly all cases, the research work reported herein is directly sponsored by one or more USAF or DoD agencies.

AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF and other DoD organizations, when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through Cooperative Research and Development Agreements (CRADAs). Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in Appendix A.

Additional information on the research programs at AFIT may also be found on the research web home page at [http://en.afit.edu/enr/](http://en.afit.edu/enr/). The Office of Research and Consulting, Graduate School of Engineering and Management, points of contact are either Dr. Heidi R. Ries, PhD, Associate Dean for Research, (937) 255-3636, ext 4544 (DSN: 785-3636, ext 4544), email afit.enrsta@afit.edu or Mr. Gary M. Koenig, PE, Research Grants Engineer, (937) 255-3636, ext 4546 (DSN: 785-3636, ext 4546), email afit.enrsta@afit.edu

1.2 THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION

AFIT offers Master’s and doctoral programs in a variety of disciplines through six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Systems and Engineering Management (ENV), and the Department of Aeronautics and Astronautics (ENY). In all these disciplines, research is an integral component of graduate education, developing an individual student’s skills and providing new knowledge of interest to many.

AFIT sends out an annual Research Activities mailings in an effort to involve sponsor organizations in research and education.

The Department of Mathematics and Statistics invites MS theses suggestions and topics for the following research specialties:

- **Applied Mathematics**
- **Statistical Analysis**
- **Nonlinear Optimization**
- **Partial Differential Equations**
- **Numerical Analysis**

The Department of Electrical and Computer Engineering invites research topic suggestions and topics for the Electrical Engineering, Computer Engineering and Computer Science programs. The following research specialties are covered by the Department:

- **Advanced Imaging and Information Processing**
- **Electromagnetics/Low Observables (Stealth)**
- **Guidance, Navigation and Control**
- **Micro Electromechanical Systems**
- **Software and Information Engineering, Visualization, and Exploration**
- **Communications/Networks**
- **Evolutionary Algorithms**
- **Information Systems, Security and Assurance**
- **Parallel/Distributed Processing**
The Department of Engineering Physics invites research topic proposals for the Engineering Physics, Nuclear Engineering, Electro-Optics (Electro-Optics shared between Electrical Engineering and Engineering Physics), Materials Science (Shared between Aeronautical Engineering and Engineering Physics), and Meteorology programs. The areas covered by these programs include:

- Atmospheric Science
- Electronic and Photonic Materials
- Modeling and Simulation
- Remote Sensing and Signature Analysis
- Counterproliferation
- Lasers and Electro-Optics
- Nuclear Weapons and Effects
- Space Weather

The Department of Operational Sciences invites research topics within the areas of Operations Research and Logistics Management. The following research specialties are covered by the Department:

- Campaign Planning and Execution
- Information Operations/Information Warfare
- Operational Problems and Heuristic Modeling
- Transportation and Strategic Mobility
- Decision and Risk Analysis
- Operational Modeling and Simulation
- Stochastic Systems Analysis
- Supply Chain Management
- Engineering Design Optimization

The Department of Systems and Engineering Management is seeking research topic proposals for the Engineering and Environmental Management, Acquisition Management, and Information Resource/Systems Management programs. The following research specialties are covered by the Department:

- Applied Environmental Sciences
- Cost Analysis
- Human Resource Management
- Information Resource Management
- Systems Management
- Contract Management
- Environmental Systems Analysis and Management
- Quantitative Decision Making
- Strategic Purchasing

The Department of Aeronautics and Astronautics invites research collaboration proposals for the Aeronautical, Astronautical and Systems Engineering programs. The Department covers the following research specialties:

- Computational Fluid Dynamics
- Materials and Structural Analysis
- Systems Engineering
- Dynamics and Control
- Propulsion Systems
- Aerodynamics

If you would like to collaborate with AFIT on research, here are some ideas:

- Look through the credentials and interests of the AFIT faculty members at Appendix A. Match your areas of interest with the research interests of one or more faculty.

- Read through the list of recent graduates’ theses titles in this report. You may find one or more AFIT Faculty Advisors who have dealt with a topic in your interest area.

- Contact a faculty member to discuss your idea for a research collaboration. A topic that has strong faculty endorsement and support is much more likely to be chosen by the students than one that lacks faculty advocacy. Topics that fall outside the collective areas of faculty competence cannot be approved, even if chosen. For maximum effectiveness all around, please talk to AFIT faculty before you submit a research suggestion. The faculty member’s phone number is found in the Appendix A of this report.

- After talking to an AFIT faculty member, prepare and send your research collaboration proposal as soon as possible. Use the following sample proposal format on the following page, or make up your own. Send your proposal to the faculty member, to the department, or to AFIT/ENR, Bldg 640, 2950 P St., Wright-Patterson AFB OH 45433-7765; or email us at afit.enrsta@afit.edu.
PROPOSED RESEARCH TOPIC FORMAT

1. RESEARCH TOPIC: Secure Optical Fiber Links Based on Chaotic Cryptography

2. INDIVIDUAL SPONSOR: Dr. Mary Jones, AFRL/XN (DSN: 123-4567)
   1234 Casimir Creek Road
   WPAFB OH 45433-5632

3. AFIT FACULTY CONTACTED: Lt Col Tom P. Smith, AFIT/ENG

4. BACKGROUND/PROBLEM: The output emission power of semiconductor laser diodes is extremely stable under normal operating conditions for standard device designs. It is, however, possible to design and operate devices in unstable, chaotic regimes. Secure optical communication systems based on standard encryption techniques are essential to current military operations. When combined with new solid-state chaotic light and detection sources, the ability to crack the codes of intercepted communications is, for all practical purposes zero. Arrays of low-cost, high-efficiency, robust microlaser diodes are ideal for this secure communication application.

5. OBJECTIVE/APPROACH:
   a. Develop numerical models of chaotic microlasers
   b. Develop time-based encryption algorithms
   c. Design and fabricate arrays of chaotic microlasers
   d. Characterize the device and system performance

6. RESOURCE REQUIREMENTS:
   a. Minimum computational requirement: Sun Microsystems Sparc2 or equivalent
   b. Clean room for device fabrication
   c. Photonics measurement equipment for device and system characterization

7. REFERENCES: None.
1.3 RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Questionnaire, shown on the following page, was sent to each sponsor of a Master’s thesis and doctoral dissertation project during FY 2002 to determine the project’s contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 1.1. The data in this table are based on 67 questionnaires returned out of the 214 questionnaires mailed.

Table 1.1: Sponsor Assessment of AFIT Research

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did this research contribute to a current Air Force/DoD project? (Yes answers)</td>
<td>100%</td>
</tr>
<tr>
<td>The thesis work was:</td>
<td></td>
</tr>
<tr>
<td>Highly significant</td>
<td>36%</td>
</tr>
<tr>
<td>Significant</td>
<td>48%</td>
</tr>
<tr>
<td>Slightly significant</td>
<td>16%</td>
</tr>
<tr>
<td>Not significant</td>
<td>0%</td>
</tr>
<tr>
<td>Average man-years of effort saved by the sponsors.</td>
<td>1</td>
</tr>
<tr>
<td>Average cost avoided per thesis/dissertation by the sponsors.</td>
<td>$90,642</td>
</tr>
<tr>
<td>Total cost avoided for all theses and dissertations sponsored.</td>
<td>$19,397,388</td>
</tr>
<tr>
<td>Rank of respondents</td>
<td></td>
</tr>
<tr>
<td>Colonel (GM-15)</td>
<td>12%</td>
</tr>
<tr>
<td>Lt Col (GM-14)</td>
<td>45%</td>
</tr>
<tr>
<td>Major (GM-13)</td>
<td>27%</td>
</tr>
<tr>
<td>Captain (GS-12)</td>
<td>8%</td>
</tr>
<tr>
<td>Other</td>
<td>8%</td>
</tr>
</tbody>
</table>
RESEARCH ASSESSMENT QUESTIONNAIRE

TO:

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author: Designator:

Faculty Advisor:

Please help us determine the value and contribution of this research to your organization’s mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization? Y / N

2. Would you have completed this work if AFIT had not done it? Y / N

3. Regardless of your answers above, how would you rate this work? Highly significant

Significant

Slightly significant

No significance

4. If AFIT had not done this work, please estimate what it would have cost your organization to perform it, either by using in-house resources or by contract. *Man-Years _____ $____________

*Please note that typically an MS thesis requires 0.5MY of the student’s time and one month of the faculty advisor’s time. For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.

5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side.)

You may mail this to AFIT/ENR, 2950 P Street, Wright-Patterson AFB OH 45433-7765, or fax it to (937) 656-7302 (DSN: 986-7302), or just e-mail your answers (only) to 1 to 5 to afit.enrsta@afit.edu. If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

_____________________________________  ______________________________
Name of Evaluator      Office Symbol

Grade/Rank of Evaluator
2 RESEARCH STATISTICS

2.1 RESEARCH AND CONSULTING OUTPUT MEASURES

Technology sharing and transfer are critical to the timely development of new operational capabilities. There are measurable indicators of AFIT’s contribution to the engineering and scientific community and AFIT’s success in staying well informed of technical possibilities and scientific opportunities. They include the number and quality of technical publications accepted by the editors of journals, the number of presentations accepted for regional, national and international conferences, the number of research projects conducted, the number of consultations performed for Air Force and DoD customers, and finally the number of student MS theses and PhD dissertations that are completed and submitted to the Defense Technical Information Center. For FY02, these output measures are shown in Table 2.1 and in Figure 2.1.

Table 2.1: Faculty Research and Consulting Output

<table>
<thead>
<tr>
<th>Graduate School Department</th>
<th>Number of Faculty</th>
<th>Refereed Publications</th>
<th>Other Publications</th>
<th>Presentations</th>
<th>Funded Research Projects</th>
<th>Substantial Consultations</th>
<th>Master’s Theses Advised</th>
<th>Doctoral Dissertations Advised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math (ENC)</td>
<td>11</td>
<td>9</td>
<td>12</td>
<td>26</td>
<td>9</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Elec (ENG)</td>
<td>22</td>
<td>23</td>
<td>98</td>
<td>105</td>
<td>38</td>
<td>54</td>
<td>51</td>
<td>6</td>
</tr>
<tr>
<td>Phys (ENP)</td>
<td>18</td>
<td>22</td>
<td>15</td>
<td>67</td>
<td>32</td>
<td>9</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>Op Sc (ENS)</td>
<td>17</td>
<td>31</td>
<td>7</td>
<td>39</td>
<td>19</td>
<td>6</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>Sys &amp; Eng Man (ENV)</td>
<td>15</td>
<td>26</td>
<td>11</td>
<td>27</td>
<td>10</td>
<td>7</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Aero (ENY)</td>
<td>16</td>
<td>19</td>
<td>40</td>
<td>41</td>
<td>35</td>
<td>17</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>130</td>
<td>183</td>
<td>305</td>
<td>143</td>
<td>93</td>
<td>177</td>
<td>22</td>
</tr>
</tbody>
</table>

Figure 2.1: Research Output Measures
2.2 RESEARCH AND CONSULTING SPONSORSHIP

As members of an Air Force institution, the faculty of the AFIT focus their research on current problems as well as future systems of the Air Force and other DoD organizations. Evidence of this focus is that 95% of all theses and dissertations listed in Table 1.2 are externally sponsored by Air Force, DoD and Government agencies. In addition, most of the research projects and consultations are carried out for Air Force and DoD units. The data are summarized in Table 2.2 and Figure 2.2.

![Figure 2.2: Sponsors of AFIT Theses and Dissertations](image)
Table 2.2: Sponsorship of AFIT Research

<table>
<thead>
<tr>
<th>SPONSOR ORGANIZATION</th>
<th>Master's Theses</th>
<th>PhD Dissertations</th>
<th>Funded Research</th>
<th>Substantial Consultations</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIR FORCE</td>
<td>17</td>
<td>11</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>AIR COMBAT COMMAND</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Air Force Information Warfare Center</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAV Battlelab</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR EDUCATION AND TRAINING COMMAND</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Force Institute of Technology</td>
<td>27</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>AIR FORCE MATERIEL COMMAND</td>
<td>9</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aeronautical Systems Center</td>
<td>7</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Air Force Research Laboratory</td>
<td>48</td>
<td>11</td>
<td>36</td>
<td>25</td>
</tr>
<tr>
<td>Air Force Research Lab/Air Force Office of Scientific Research</td>
<td>9</td>
<td>7</td>
<td>36</td>
<td>5</td>
</tr>
<tr>
<td>Space and Missile Systems Center</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Air Force Flight Test Center</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR FORCE SPACE COMMAND</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR FORCE SPECIAL OPERATIONS COMMAND</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR MOBILITY COMMAND</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PACIFIC AIR FORCES</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USAF FIELD OPERATING AGENCIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Force Center for Environmental Excellence</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Air Force Civil Engineer Support Agency</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Force Combat Climatology Center</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Force Technical Applications Center</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Air Force Weather Agency</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USAF DIRECT REPORTING UNIT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Force Communication Agency</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Air Force Operational Test and Evaluation Center</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ARMY</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEPARTMENT OF DEFENSE</td>
<td>4</td>
<td>1</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Defense Advanced Research Projects Agency</td>
<td>2</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Defense Threat Reduction Agency</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Office of the Secretary of Defense</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>USSTRATCOM</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NATIONAL SECURITY AGENCY</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>DEPARTMENT OF ENERGY</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEPARTMENT OF HOMELAND SECURITY</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States Coast Guard</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NATIONAL AIR AND SPACE ADMINISTRATION</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>DAYTON AREA GRADUATE STUDIES INSTITUTE</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td>NORTH ATLANTIC TREATY ORGANIZATION</td>
<td>4</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ARGENTINE AIR FORCE MATERIEL COMMAND</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOREAN AIR FORCE</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TURKISH AIR FORCE</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHERS</td>
<td>2</td>
<td>1</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td><strong>182</strong>*</td>
<td><strong>24</strong>*</td>
<td><strong>121</strong></td>
<td><strong>93</strong></td>
</tr>
</tbody>
</table>

*Multiple Sponsors
2.3 OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

Many of the Graduate School of Engineering and Management’s theses and research projects completed under faculty supervision (sponsored or unsponsored) are funded in part by other Air Force, DoD and government units and agencies. Often this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Table 2.3 and Figure 2.3 summarize outside funding for FY02.

Table 2.3: Sponsoring Organizations for Funded Research

<table>
<thead>
<tr>
<th>Sponsoring Organization</th>
<th>Funded Projects</th>
<th>Dollars ($)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFRL/AFOSR</td>
<td>37</td>
<td>$1,329,340</td>
</tr>
<tr>
<td>AFRL/VA, DE, HE, IF, ML, MN, PR, SN, and VS</td>
<td>35</td>
<td>$853,734</td>
</tr>
<tr>
<td>Other USAF</td>
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<td>$520,733</td>
</tr>
<tr>
<td>Other DOD</td>
<td>15</td>
<td>$960,397</td>
</tr>
<tr>
<td>Other Government Agencies</td>
<td>3</td>
<td>$163,307</td>
</tr>
<tr>
<td>Tech Transfer (CRADAs)</td>
<td>12</td>
<td>$1,201,511</td>
</tr>
<tr>
<td>**TOTAL</td>
<td>121</td>
<td>$5,029,022*</td>
</tr>
</tbody>
</table>

* Includes carry over funding from FY01 of $875,545.

**DoD regulations limit AFIT’s charges to DoD organizations. Accounting for these nonchargeable items, the cost of our research program at a comparable civilian university would have been approximately $9.2 million.

Figure 2.3: FY02 Funded Research

![Figure 2.3: FY02 Funded Research Diagram]
2.4 FACULTY FELLOWS

Bridgman, Charles J., Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, Fellow of the American Nuclear Society.

D’Azzo, John J., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Franke, Milton E., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

Houpis, Constantine H., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Mall, Shankar, Air Force Research Laboratory, Professor, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

Maybeck, Peter S., Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Pachter, Meir, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Palazotto, Anthony N., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Civil Engineers.

Torvik, Peter J., Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, Fellow of the American Institute of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers.
2.5 PROFESSIONAL CERTIFICATION

Anthenien, Ralph A., Professional Engineer, State of Ohio, E-67057

Brady, Stephan P., Certified Professional Logistician, Society of Logistics Engineers

Brothers, Heidi S., P.E., Professional Engineer, State of Oregon and California, C44500

Chrissis, James W., Professional Engineer, State of Florida, 0037247

D’Azzo, John J., Professional Engineer, State of Ohio, E-12550

England, Ellen, National Certification, Board of Certified Safety Professionals, Certified Safety Professional, #15179

England, Ellen, National Certification, American Board of Industrial Hygiene, Certified Industrial Hygienist, #6374

Goltz, Mark N., P.E., Professional Engineer, State of Minnesota, 13978

Goltz, Mark N., DEE, Diplomate Environmental Engineer, American Academy of Environmental Engineers, Hazardous Waste Management Specialty Certification

Greiner, Michael A., Certified Cost Estimator/Analyst, Society of Cost Estimating and Analysis

Gunsch, Gregg H., Professional Engineer, State of Ohio, E-56828

Heil, Michael L., Professional Engineer, State of Colorado, 167712

Houpis, Constantine H., Professional Engineer, State of Ohio, E-19084

Jodoin, Vincent J., Professional Engineer, State of Ohio, E-57166

LaPuma, Peter T., Professional Engineer, State of Ohio, E-66529

Palazotto, Anthony N., Professional Engineer, State of Ohio, E-39937

Perram, Glen P., Professional Engineer, State of Ohio, E-060534

Quinn, Dennis W., Professional Engineer, State of Ohio, E-056873

Reeder, Mark F., Professional Engineer, State of Ohio, E-63844

Spenny, Curtis H., Professional Engineer, State of Ohio, E-038759
3. CONTRIBUTIONS TO THE AIR FORCE

3.1 DOCTORAL DISSERTATIONS

*Multiple Sponsors


*Bassham, Christopher B.  *Automatic Target Recognition Classification System Evaluation Methodology*.  AFIT/DS/ENS/02-03.  Faculty Advisor:  Dr. Kenneth W. Bauer, Jr., DSN: 785-6565, ext 4328.  Sponsor:  AFRL/Sensors and ACC/DRSA.

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Hebert, Jeffrey M.  *Air Vehicle Path Planning*.  AFIT/DS/ENG/01-04.  Faculty Advisor:  Dr. Meir Pachter, DSN: 785-3636 ext 4593.  Sponsor:  AFRL/VACA.

Laird, David J.  *The Investigation of Hypervelocity Gouging.*  AFIT/DS/ENY/02-01.  Faculty Advisor: Dr. Anthony N. Palazotto, DSN: 785-3636, ext 4599.  Sponsor: AFOSR/NM.

Lucia, David J.  *Reduced Order Modeling for High Speed Flows with Moving Shocks.*  AFIT/DS/ENY/01-03.  Faculty Advisor: Dr. Paul King, DSN: 785-3636, ext 4628.  Sponsor: AFRL/VASD.


Renfro, Robert S.  *Modeling and Analysis of Social Networks.*  AFIT/DS/ENS/01-03.  Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325.  Sponsor: NSA/NAIC.


Russell, Timothy H.  *Laser Intensity Scaling Through Stimulated Scattering in Optical Fibers.*  AFIT/DS/ENP/02-03.  Faculty Advisor: Dr. Won B. Roh, DSN: 785-3636, ext 4509.  Sponsor: AFOSR/NE.


Suriano, Mark A.  *Short and Independent Characteristic Methods for Discrete Ordinates Radiation Transport with 2D and 3D Regular Cartesian Meshes.*  AFIT/DS/ENP/02-1.  Faculty Advisor: Dr. Kirk A. Mathews, DSN: 785-3636, ext 4508.  Sponsor: DTRA/CSNP-LANL.
3.2 MASTER’S THESES BY PROGRAM

* Multiple Sponsors

3.2.1 ACQUISITION MANAGEMENT


Chelf, Kurt A.  *Beyond A-76: How to Achieve the Goals without the Pain.*  AFIT/GAQ/ENV/02M-02.  Faculty Advisor:  Maj Timothy S. Reed, DSN: 785-3636, ext 4799.  Sponsor:  AFIT/EN.


Daly, Mark A.  *Task Load and Automation Use in an Uncertain Environment.*  AFIT/GAQ/ENV/02M-05.  Faculty Advisor:  Lt Col David Biros, DSN: 785-3636, ext 4826.  Sponsor:  AFOSR.


### 3.2.2 AERONAUTICAL ENGINEERING


Magaziner, Russell S.  *Examination of Contact Width on Fretting Fatigue*.  AFIT/GAE/ENY/02-8.  Faculty Advisor: Dr. Shankar Mall, DSN: 785-3636, ext 4587.  Sponsor: AFRL/MLLMN.


Yuksel, Halil I. *Effects of Shot-Peening on High Cycle Fretting Fatigue Behavior of Ti-6Al-4V.* AFIT/GAE/ENY/02-12. Faculty Advisor: Dr. Shankar Mall, DSN: 785-3636, ext 4587. Sponsor: AFRL/MLLMN.

### 3.2.3 APPLIED MATHEMATICS

*Campbell, Matthew L. *Cell Modeling.* AFIT/GAM/ENC/02M-01. Faculty Advisor: Dr. Dennis W. Quinn, DSN: 785-6565, ext 4522. Sponsor: AFOSR and DAGSI.

Goldberg, Jacob B. *Finite Extinction Time for Non-Linear Absorption-Diffusion Equations.* AFIT/GAM/ENC/02S-02. Faculty Advisor: Dr. Alan V. Lair, DSN: 785-3636, ext 4519. Sponsor: AFIT/EN.

Olson, Rebecca A. *Comparing Clustering Algorithms for Use with Genomic and Proteomic Data.* AFIT/GAM/ENC/02S-1. Faculty Advisor: Dr. Dennis W. Quinn, DSN: 785-3636, ext 4522. Sponsor: AFOSR.

### 3.2.4 APPLIED PHYSICS


### 3.2.5 ASTRONAUTICAL ENGINEERING


Sobers, Michael D. *Smart Structures for Control of Optical Surfaces.* AFIT/GA/ENY/02-2. Faculty Advisor: Maj Gregory S. Agnes, DSN: 785-6565, ext 4317. Sponsor: AFOSR/NA.

### 3.2.6 COMPUTER ENGINEERING


### 3.2.7 COMPUTER SYSTEMS


Harris, Chad M. *A Collaborative Visualization Framework Using JINI Tecnology.* AFIT/GCS/ENG/02M-04. Faculty Advisor: Lt Col Timothy M. Jacobs, DSN: 785-6565, ext 4279. Sponsor: AFRL/IFTC.

Jensen, Nathan A. *Space Time Adaptive Processing and Clutter Classification Integration and Evaluation.* AFIT/GCS/ENG/02M-05. Faculty Advisor: Dr. Gary B. Lamont, DSN: 785-3636, ext 4718. Sponsor: AFRL/IFTC.


Lykins, Rodney D. *Application of Information Retrieval Techniques to Heterogeneous Databases in the Virtual Distributed Laboratory.* AFIT/GCS/ENG/02M-06. Faculty Advisor: Maj Karl S. Mathias, DSN: 785-6565, ext 4280. Sponsor: AFRL/IFC.


Trias, Eric D. *An Extensible Information Retrieval Methodology for Reuse and Integration of Combat Simulation Database Models.* AFIT/GCS/ENG/02M-08. Faculty Advisor: Maj Karl S. Mathias, DSN: 785-6565, ext 4280. Sponsor: AFRL/SNZW.

3.2.8 ELECTRICAL ENGINEERING


Coker, Jamie C. *Design of a High-Fidelity MATLAB Simulator for an Ultratightly Coupled GPS/INS Receiver Based on a Federated Filter Approach.* AFIT/GE/ENG/02M-03. Faculty Advisor: Lt Col Mikel M. Miller, DSN: 785-7777, ext 3295. Sponsor: AFRL/SNRP.


Kim, Jesung. *Post-Processing of Low Dose Mammography Images.* AFIT/GE/ENG/02-35. Faculty Advisor: Dr. Steven Gustafson, DSN 785-3636, ext 4598. Sponsor: 74 MDG/SGSXN.


Tredway, Brian R.  Using the GPS to Collect Trajectory Data for Ejection Seat Design, Validation, and Testing.  AFIT/GE/ENG/02M-27.  Faculty Advisor: Lt Col Mikel M. Miller, DSN: 785-7777, ext 3295.  Sponsor: AFRL/HEPA.


3.2.9 ELECTRO-OPTICS


3.2.10 ENGINEERING AND ENVIRONMENTAL MANAGEMENT


Entingh, Andrew C.  Groundwater Flow through a Constructed Treatment Wetland.  AFIT/GEE/ENV/02M-03.  Faculty Advisor: Dr. Michael L. Shelley, DSN: 785-3636, ext 4594.  Sponsor: AFRL/MLQ.


Jurk, David M.  Decision Analysis with Value Focused Thinking as a Methodology to Select Force Protection Initiatives for Evaluation.  AFIT/GEE/ENV/02M-05.  Faculty Advisor: Lt Col Al Thal, Jr., DSN: 785-3636, ext 4591.  Sponsor: USAF FPB/CC.

Katzer, Dee J.  Decision Analysis with Value-Focused Thinking as a Methodology in Structuring the Civil Engineer Operations Flight.  AFIT/GEE/ENV/02M-06.  Faculty Advisor: Lt Col Al Thal, Jr., DSN: 785-3636, ext 4591.  Sponsor: AFIT/EN.

Parr, Jeffrey C.  *Application of Horizontal Flow Treatment Wells for In Situ Treatment of Perchlorate Contaminated Groundwater.*  AFIT/GEE/ENV/02M-08.  Faculty Advisor: Dr. Mark N. Goltz, DSN: 785-3636, ext 4638.  Sponsor: AFCEE/ERC.


*Rhodes, Brian S.  *Chromate Content Bias Versus Overspray Particle Size in Three Aircraft Primer Paints.*  AFIT/GEE/ENV/02M-11.  Faculty Advisor: Maj Peter T. LaPuma, DSN: 785-6565, ext 4319.  Sponsor: HQ AFMC/CEVQ and AFRL/MLQL.


**3.2.11 INFORMATION RESOURCE MANAGEMENT**

Gustafson, Yashua W. *An Exploratory Study of the Air Force's Technical IT Infrastructure Flexibility.*  
AFIT/GIR/ENV/02M-02. Faculty Advisor: Dr. Alan R. Heminger, DSN: 785-3636, ext 4797. Sponsor: HQ USAF/SCTA.

Hale, James M. *Towards Cognitively-Based Intrusion Detection Through Advanced Visualization Design.*  
AFIT/GIR/ENG/02M-02. Faculty Advisor: Dr. Gregg H. Gunsch, DSN: 785-6565, ext 4281. Sponsor: 33IOS/DO AFIWC AIA ACC.

Ladd, Darin A. *An Investigation of Environmental Factors That Influence Knowledge Transfer in the Air Force.*  
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Reynolds, Kevin A. *Going the Distance With Distance Learning: An Analysis of Motivational Factors That Influence E-Learning Course Completion Rates.*  
AFIT/GIR/ENV/02M-04. Faculty Advisor: Dr. Alan Heminger, DSN: 785-3636, ext 4797. Sponsor: AFIT/LS.


### 3.2.12 LOGISTICS MANAGEMENT

Abreu, Roberto C. *The Effects of Variability in Demand and Time Parameters for Multi-Item, Multi-Echelon, Multi-Indenture Reparable Inventory Systems.*  

Bertulis, Todd S. *Interim Brigade Combat Team (IBCT) Munitions Distribution Study.*  
AFIT/GLM/ENS/02-02. Faculty Advisor: Lt Col J. O. Miller, DSN: 785-6565, ext 4326. Sponsor: CASCOM, DCD-CSS.

Botkin, Brian J. *An Analysis of Alternate Fuel Delivery Methods for the Central Europe Pipeline System.*  


AFIT/GLM/ENS/02-05. Faculty Advisor: Dr. William Cunningham, III, DSN: 785-6565, ext 4283. Sponsor: AFMC/LSO.

Ilbas, Ahmet. *Offsets in International Weapons Acquisitions: The Turkish Experience.*  

Jones, Andrew C. *An Analysis of Airfield Throughput at Elemendorf Air Force Base Using the Airfield Simulation Tool.*  
AFIT/GLM/ENS/02-07. Faculty Advisor: Dr. William Cunningham, III, DSN: 785-6565, ext 4283. Sponsor: USTRANSCOM, J5AI.

Kim, Jung Jin. *Comparative Analysis of Leasing versus Buying General Purpose Vehicles (Sedan) in the Korean Air Force.*  

AFIT/GLM/ENS/02-09. Faculty Advisor: Lt Col Stephan P. Brady, DSN: 785-6565, ext 4367. Sponsor: AFIT/EN.


### 3.2.13 METEOROLOGY

Carter, Dean J. *Verification of MM5 Cloud Microphysics Schemes for East Asia.* AFIT/GM/ENP/02M-01. Faculty Advisor: Lt Col Ronald P. Lowther, DSN: 785-3636, ext 4645. Sponsor: PACAF/DOWO.


Evans, Robert W. *Quantification of the Effects of Data Denial and Limitation in MM5 Initialization of Forecast Accuracy.* AFIT/GM/ENP/02M-03. Faculty Advisor: Lt Col Michael K. Walters, DSN: 785-3636, ext 4681. Sponsor: AFWA/DNXM.


McNamara, Todd M. *The Horizontal Extent of Cloud-to-Ground Lightning Over the Kennedy Space Center.* AFIT/GM/ENP/02M-06. Faculty Advisor: Maj Gary R. Huffines, DSN: 785-3636, ext 4511. Sponsor: ASC/YCA.

Randall, Robb M. *Exploration of Teleconnection Indices for Long-Range Seasonal Temperature Forecasts.* AFIT/GM/ENP/02M-08. Faculty Advisor: Lt Col Ronald P. Lowther, DSN: 785-3636, ext 4645. Sponsor: AFCCC/DO.


**3.2.14 NUCLEAR ENGINEERING**


Jones, Kent T. *Measurements of Neutron Induced Surface and Bulk Defects in 4H Silicon Carbide.* AFIT/GNE/ENP/02M-03. Faculty Advisor: LTC Petrosky, DSN: 785-3636, x4600. Sponsor: AFIT/EN.

Kowash, Benjamin R. *Parameter Study for Optimizing the Mass of a Space Nuclear Power System Radiation Shield.* AFIT/GNE/ENP/02M-04. Faculty Advisor: Dr. Tuttle, DSN: 785-3636, x4536. Sponsor: AFIT/EN.


3.2.15 OPERATIONS RESEARCH

Annaballi, Ronjon. *A Multiple Ant Colony Optimization Metaheuristic for the Air Refueling Tanker Assignment Problem.* AFIT/GOR/ENS/02-01. Faculty Advisor: Dr. James T. Moore, DSN: 785-6565, ext 4337. Sponsor: AFOSR.

Aslan, Ismail. *Selecting Salient Features in High Feature to Exemplar Ratio Conditions.* AFIT/GOR/ENS/02-02. Faculty Advisor: Dr. Kenneth W. Bauer, Jr., DSN: 785-6565, ext 4328. Sponsor: AFIT/EN.

Bell, Aaron J. *Analysis of GPS Satellite Allocation for the United States Nuclear Detonation Detection System (USNDS).* AFIT/GOR/ENS/02-03. Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325. Sponsor: AFIT/EN.


Pektas, Mustafa Kemal. *Quicklook Air Mobility Modeling.* AFIT/GOR/ENS/02-14. Faculty Advisor: Dr. James T. Moore, DSN: 785-6565, ext 4337. Sponsor: HQ AMC/XPY.


Young, Ian A. Development of a Pilot Candidate Selection Model Using Multivariate Techniques. AFIT/GOR/ENS/02-18. Faculty Advisors: Dr. Kenneth W. Bauer, DSN; 785-6565, ext 4328; Capt Stephen Chambal, DSN; 785-6565, ext 4314. Sponsor: AETC/SAS.

3.2.16 SPACE OPERATIONS


3.2.17 SYSTEMS ENGINEERING

Akyazi, Ugur. Commercial Regional Space/Airborne Imaging. AFIT/GSE/ENY/02-1. Faculty Advisor: Dr. Curtis H. Spenny, DSN: 785-7777, ext 3296. Sponsor: AFIT/EN.


Boga, Birce. Commercial Regional Space/Airborne Imaging. AFIT/GSE/ENY/02-1. Faculty Advisor: Dr. Curtis H. Spenny, DSN: 785-7777, ext 3296. Sponsor: AFIT/EN.

3.3 SPONSORS OF MASTER’S THERSES
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3.3.2 AIR COMBAT COMMAND (29)
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   UAV BATTLELAB

3.3.3 AIR EDUCATION AND TRAINING COMMAND (29)
   AIR FORCE INSTITUTE OF TECHNOLOGY

3.3.4 AIR FORCE MATERIEL COMMAND (31)
   AERONAUTICAL SYSTEMS CENTER
   AIR FORCE RESEARCH LABORATORY
   AIR FORCE RESEARCH LABORATORY/AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
   SPACE AND MISSLE SYSTEMS CENTER
   AIR FORCE FLIGHT TEST CENTER

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   AIR FORCE COMBAT CLIMATOLOGY CENTER
   AIR FORCE TECHNICAL APPLICATIONS CENTER
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   AIR FORCE COMMUNICATION AGENCY
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   DEFENSE ADVANCED RESEARCH PROJECTS AGENCY
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3.3.18 ARGENTINE AIR FORCE MATERIEL COMMAND (42)

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3.3.21 STAR TECHNOLOGY and RESEARCH, INC. (43)

3.3.22 SHEET DYNAMICS, LTD. (43)
3.3.1 AIR FORCE


Hoggard, Zabrina Y. Identifying Enlisted Stay and Leave Population Characteristics with Discriminant Analysis. AFIT/GOR/ENS/02-08. Faculty Advisor: Lt Col Miller, DSN: 785-6565, ext 4326. Sponsor: AFPOA.


Jurk, David M. Decision Analysis with Value Focused Thinking as a Methodology to Select Force Protection Initiatives for Evaluation. AFIT/GEE/ENV/02M-05. Faculty Advisor: Lt Col Al Thal, Jr., DSN: 785-3636, ext 4591. Sponsor: USAF FPB/CC.


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### 3.3.2 AIR COMBAT COMMAND


*Bassham, Christopher B. *Automatic Target Recognition Classification System Evaluation Methodology.* AFIT/DS/ENS/02-03. Faculty Advisor: Dr. Kenneth W. Bauer, Jr., DSN: 785-6565, ext 4328. Sponsor: AFRL/Sensors and ACC/DRSA.


### AIR FORCE INFORMATION WARFARE CENTER

Hale, James M. *Towards Cognitively-Based Intrusion Detection Through Advanced Visualization Design.* AFIT/GIR/ENG/02M-02. Faculty Advisor: Dr. Gregg H. Gunsch, DSN: 785-6565, ext 4281. Sponsor: 33IOS/DO AFIWC AIA ACC.

### UAV BATTLELAB


### 3.3.3 AIR EDUCATION AND TRAINING COMMAND


### AIR FORCE INSTITUTE OF TECHNOLOGY


29
Aslan, Ismail. *Selecting Salient Features in High Feature to Exemplar Ratio Conditions.* AFIT/GOR/ENS/02-02. Faculty Advisor: Dr. Kenneth W. Bauer, Jr., DSN: 785-6565, ext 4328. Sponsor: AFIT/EN.


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3.3.4 AIR FORCE MATERIEL COMMAND


*Rhodes, Brian S.*  *Chromate Content Bias Versus Overspray Particle Size in Three Aircraft Primer Paints*.  AFIT/GEE/ENV/02M-11.  Faculty Advisor: Maj Peter T. LaPuma, DSN: 785-6565, ext 4319.  Sponsor: HQ AFMC/CEVQ and AFRL/MLQL.


**AERONAUTICAL SYSTEMS CENTER**

Kim, Jesung.  *Post-Processing of Low Dose Mammography Images.*  AFIT/GE/ENG/02-35.  Faculty Advisor: Dr. Steven Gustafson, DSN 785-3636, ext 4598.  Sponsor: 74 MDG/SGSXN.

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**AIR FORCE RESEARCH LABORATORY**


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Magaziner, Russell S. Examination of Contact Width on Fretting Fatigue. AFIT/GAE/ENY/02-8. Faculty Advisor: Dr. Shankar Mall, DSN: 785-3636, ext 4587. Sponsor: AFRL/MLLMN.


Polat, Murat. INS Aiding by Tracking an Unknown Ground Object. AFIT/GE/ENG/02M-20. Faculty Advisor: Dr Meir Pachter, DSN: 785-3636, ext 4593. Sponsor: AFRL/SNAT.


Tredway, Brian R.  *Using the GPS to Collect Trajectory Data for Ejection Seat Design, Validation, and Testing.*  AFIT/GE/ENG/02M-27.  Faculty Advisor: Lt Col Mikel M. Miller, DSN: 785-7777, ext 3295.  Sponsor: AFRL/HEP.

Trias, Eric D.  *An Extensible Information Retrieval Methodology for Reuse and Integration of Combat Simulation Database Models.*  AFIT/GCS/ENG/02M-08.  Faculty Advisor: Maj Karl S. Mathias, DSN: 785-6565, ext 4280.  Sponsor: AFRL/SNZW.


Yuksel, Halil I.  *Effects of Shot-Peening on High Cycle Fretting Fatigue Behavior of Ti-6Al-4V.*  AFIT/GAE/ENY/02-12.  Faculty Advisor: Dr. Shankar Mall, DSN: 785-3636, ext 4587.  Sponsor: AFRL/MLMN.


**AIR FORCE RESEARCH LABORATORY/AIR FORCE OFFICE OF SCIENTIFIC RESEARCH**

Annaballi, Ronjon.  *A Multiple Ant Colony Optimization Metaheuristic for the Air Refueling Tanker Assignment Problem.*  AFIT/GOR/ENS/02-01.  Faculty Advisor: Dr. James T. Moore, DSN: 785-6565, ext 4337.  Sponsor: AFOSR.

*Campbell, Matthew L.  *Cell Modeling.*  AFIT/GAM/ENC/02M-01.  Faculty Advisor: Dr. Dennis W. Quinn, DSN: 785-6565, ext 4522.  Sponsor: AFOSR and DAGSI.


Daly, Mark A.  *Task Load and Automation Use in an Uncertain Environment.*  AFIT/GAQ/ENV/02M-05.  Faculty Advisor: Lt Col David Biros, DSN: 785-3636, ext 4826.  Sponsor: AFOSR.

*Fellows, James A.  *Electrical Activation Studies of ION Implanted Gallium Nitride.*  AFIT/DS/ENP/02-02.  Faculty Advisor: Dr. Yung Kee Yeo, DSN: 785-3636, ext 4532.  Sponsor: AFOSR/NE and AFRL/MLPS.


Laird, David J.  *The Investigation of Hypervelocity Gouging.*  AFIT/DS/ENY/02-01.  Faculty Advisor: Dr. Anthony N. Palazotto, DSN: 785-3636, ext 4599.  Sponsor: AFOSR/NM.


Olson, Rebecca A.  *Comparing Clustering Algorithms for Use with Genomic and Proteomic Data.*  AFIT/GAM/ENC/02S-1.  Faculty Advisor: Dr. Dennis W. Quinn, DSN: 785-3636, ext 4522.  Sponsor: AFOSR.


Russell, Timothy H.  *Laser Intensity Scaling Through Stimulated Scattering in Optical Fibers.*  AFIT/DS/ENP/02-03.  Faculty Advisor: Dr. Won B. Roh, DSN: 785-3636, ext 4509.  Sponsor: AFOSR/NE.


Sobers, Michael D.  *Smart Structures for Control of Optical Surfaces.*  AFIT/GA/ENY/02-02.  Faculty Advisor: Maj Gregory S. Agnes, DSN: 785-6565, ext 4317.  Sponsor: AFOSR/NA.

**SPACE AND MISSLE SYSTEMS CENTER**


AIR FORCE FLIGHT TEST CENTER


3.3.5 AIR FORCE SPACE COMMAND


3.3.6 AIR FORCE SPECIAL OPERATIONS COMMAND


3.3.7 AIR MOBILITY COMMAND


Pektas, Mustafa Kemal. *Quicklook Air Mobility Modeling.* AFIT/GOR/ENS/02-14. Faculty Advisor: Dr. James T. Moore, DSN: 785-6565, ext 4337. Sponsor: HQ AMC/XPY.

3.3.8 PACIFIC AIR FORCES

Carter, Dean J. *Verification of MM5 Cloud Microphysics Schemes for East Asia.* AFIT/GM/ENP/02M-01. Faculty Advisor: Lt Col Ronald P. Lowther, DSN: 785-3636, ext 4645. Sponsor: PACAF/DOWO.


3.3.9 USAF FIELD OPERATING AGENCIES

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE

Parr, Jeffrey C. *Application of Horizontal Flow Treatment Wells for In Situ Treatment of Perchlorate Contaminated Groundwater.* AFIT/GEE/ENV/02M-08. Faculty Advisor: Dr. Mark N. Goltz, DSN: 785-3636, ext 4638. Sponsor: AFCEE/ERC.


AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

Phillips, Edward P.  *Evaluating Air Force Civil Engineers' Current Automated Information Systems.*  
AFIT/GEE/ENV/02M-09.  Faculty Advisor: Lt Col Al E. Thal, DSN: 785-3636, ext 4591.  Sponsor: AFCESA/CEO.

AFIT/GEE/ENV/02M-16.  Faculty Advisor: Maj Peter T. LaPuma, DSN: 785-6565, ext 4319.  Sponsor: HQ ASCESA/CESM.

**AIR FORCE COMBAT CLIMATOLOGY CENTER**

Freestrom, Hugh J.  *Designing an Algorithm to Predict the Intensity of the Severe Weather Season.*  

Randall, Robb M.  *Exploration of Teleconnection Indices for Long-range Seasonal Temperature Forecasts.*  
AFIT/GM/ENP/02M-08.  Faculty Advisor: Lt Col Ronald P. Lowther, DSN: 785-3636, ext 4645.  Sponsor: AFCCC/DO.

**AIR FORCE TECHNICAL APPLICATIONS CENTER**

Bell, Aaron J.  *Analysis of GPS Satellite Allocation for the United States Nuclear Detonation Detection System (USNDS).*  
AFIT/GOR/ENS/02-03.  Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325.  Sponsor: AFTAC.

Fee, James R.  *Updating and Benchmarking a Nuclear Reactor Burn Code.*  
AFIT/GNE/ENP/02M-02.  Faculty Advisor: Lt Col Vincent J. Jodoin, DSN: 785-3636, ext 4506.  Sponsor: AFTAC.

Gerts, David W.  *Efficient and Accurate Computation of Non-Negative Anisotropic Group Scattering Cross Sections for Discrete Ordinates and Monte Carlo Radiation Transport.*  
AFIT/DS/ENP/02-4.  Faculty Advisor: Dr. Kirk A. Mathews, DSN: 785-3636, ext 4508.  Sponsor: AFTAC.

**AIR FORCE WEATHER AGENCY**

Courtemanche, William E.  *Verification and Comparison of Polar MM5 and AFWA MM5 Forecasts over Alaska.*  

Evans, Robert W.  *Quantification of the Effects of Data Denial and Limitation in MM5 Initialization of Forecast Accuracy.*  
AFIT/GM/ENP/02M-03.  Faculty Advisor: Lt Col Michael K. Walters, DSN: 785-3636, ext 4681.  Sponsor: AFWA/DNXM.

Garay, David A.  *Estimation of Atmospheric Precipitable Water Using the Global Positioning System.*  

Lacroix, Kevin W.  *Application of the Wind Gust Estimate and Comparison to the AFWA MM5 Wind Gust Algorithm.*  

Visser, Harmen P.  *Suitability of Unidat Metapps for Incorporation in Platform-Independent User-Customized Aviation Weather Products Generation Software.*  
AFIT/GM/ENP/02M-09.  Faculty Advisor: Lt Col Timothy M. Jacobs, DSN: 785-6565, ext 4279.  Sponsor: AFWA/DNXT.

Vollmer, Patricia A.  *GPS-Deprived Precipitable Water Compared with the Air Force Weather Agency's MM5 Model Output.*  
3.3.10 USAF DIRECT REPORTING UNITS

AIR FORCE COMMUNICATION AGENCY


AIR FORCE OPERATIONAL TEST AND EVALUATION CENTER


3.3.11 ARMY

Bertulis, Todd S.  *Interim Brigade Combat Team (IBCT) Munitions Distribution Study.*  AFIT/GLM/ENS/02-02.  Faculty Advisor: Lt Col J. O. Miller, DSN: 785-6565, ext 4326.  Sponsor: CASCOM, DCD-CSS.

3.3.12 DEPARTMENT OF DEFENSE


DEFENSE ADVANCED RESEARCH PROJECTS AGENCY

Punches, Craig A.  *A Large Scale Integer Linear Program as a Decision Support Tool for Force Mix Selection.*  

**DEFENSE THREAT REDUCTION AGENCY**

McNabb, Suzanna J.  *A Multi-Isotope Comparison Technique for the Correction of Fractionated Nuclear Debris.*  

Plante, Dirk E.  *A Study of the Hazard Prediction and Assessment Capability (HPAC) Software’s Ability to Predict Nuclear Reactor Accidents Using the Chernobyl Accident.*  

Suriano, Mark A.  *Short and Independent Characteristic Methods for Discrete Ordinates Radiation Transport with 2D and 3D Regular Cartesian Meshes.*  

AFIT/GNE/ENP/02M-07.  Faculty Advisor: LTC James Petrosky, DSN: 785-3636, ext 4800.  Sponsor: DTRA.

**OFFICE OF SECRETARY OF DEFENSE**

Brown, Thomas W.  *Forecasting Research and Development Program Budgets Using the Weibull Model.*  
AFIT/GAQ/ENC/02M-01.  Faculty Advisor: Maj Edward D. White III.  Sponsor: OSD PA&E (RA).

**USSTRATCOM**

Jones, Andrew C.  *An Analysis of Airfield Throughput at Elemendorf Air Force Base Using the Airfield Simulation Tool.*  
AFIT/GLM/ENS/02-07.  Faculty Advisor: Dr. William Cunningham, DSN: 785-6565, ext 4283.  Sponsor: USTRANSCOM, J5AI.

**3.3.13 NATIONAL SECURITY AGENCY**

Renfro, Robert S.  *Modeling and Analysis of Social Networks.*  
AFIT/DS/ENS/01-03.  Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325.  Sponsor: NSA and NAIC.

AFIT/GCE/ENG/02M-03.  Faculty Advisor: Maj Rusty O. Baldwin, DSN: 785-3636, ext 4612.  Sponsor: ANSA/IR5.

AFIT/GOR/ENS/02-17.  Faculty Advisor: Dr. Richard F. Deckro, DSN: 785-6565, ext 4325.  Sponsor: NSA.

AFIT/GCS/ENG/02M-04.  Faculty Advisor: Maj Rusty O. Baldwin, DSN: 785-3636, ext 4612.  Sponsor: NSA.

**3.3.14 DEPARTMENT OF ENERGY**

Ellering, Christine P.  *The Combined Effects of Freestream Turbulence, Pressure Gradients, and Surface Roughness on Turbine Aerodynamics.*  
AFIT/GAE/ENY/02-5.  Faculty Advisor: Maj Jeffrey P. Bons, DSN: 785-3636, ext 4327.  Sponsor: DOE/SCIES.
3.3.15 DEPARTMENT OF HOMELAND SECURITY

US COAST GUARD


3.3.16 NATIONAL AIR AND SPACE ADMINISTRATION (NASA)


3.3.17 DAYTON AREA GRADUATE STUDIES INSTITUTE

*Campbell, Matthew L. *Cell Modeling*. AFIT/GAM/ENC/02M-01. Faculty Advisor: Dr. Dennis W. Quinn, DSN: 785-6565, ext 4522. Sponsor: AFOSR and DAGSI.


3.3.18 NORTH ATLANTIC TREATY ORGANIZATION


3.3.19 ARGENTINE AIR FORCE MATERIEL COMMAND


3.3.20 KOREAN AIR FORCE


3.3.21 TURKISH AIR FORCE

3.3.22 STAR TECHNOLOGY AND RESEARCH, INC.


3.3.23 SHEET DYNAMICS, LTD.

3.4 FUNDED RESEARCH PROJECTS

AGNES, Maj GREGORY S., (ENY)


ANTHENIEN, Capt RALPH A., JR., (ENY)


BAILEY, WILLIAM F., (ENP)


BALDWIN, Maj RUSTY O., (ENG)

“Classification and Analysis of Wireless and Local Area Network Communication,” Sponsor: NSA, Funding: $30,000.


BAUER, KENNETH W., (ENS)

“Pilot Candidate Selection Method (PCSM) Study,” Sponsor: AETC, Funding: $3,000.

“Memorandum of Agreement Between Headquarters, Air Combat Command and Department of Operational Sciences, Air Force Institute of Technology (AFIT) Cruise Missile Reliability Study,” Sponsor: ACC, Funding: $10,000.


BIROS, Lt Col DAVID P., (ENV)


BLECKMANN, CHARLES A., (ENV)

“Microbial Contamination of Fuels,” Sponsor: AFRL/PRTG, Funding: $3,000.

BURGGRAF, LARRY W., (ENP)


CANFIELD, Lt Col ROBERT A., (ENY)


CHAMBAL, Capt STEPHEN P., (ENS)

“Pilot Candidate Selection Method (PCSM) Follow-On Study,” Sponsor: AETC, Funding: $14,000.

“C-17 Strategic Brigade Airdrop Simulation and Analysis Follow-On Effort,” Sponsor: CRADA Salary Fund, Funding: $5,570.


CHILTON, Lt Col LAWRENCE K., (ENC)

“DOD High Performance Computing Modernization Office (HPCMO),” Sponsor: HPC Mod Off, Funding: $36,000.


CLAYPOOLE, Maj ROGER L., (ENG)


CUNNINGHAM, WILLIAM A. III (ENS)


DECKRO, RICHARD F., (ENS)

“Analysis and Measures of Networks (JWAC),” Sponsor: JWAC, Funding: $100,000.

“MOA-Center for Operations Research in NSA,” Sponsor: NSA, Funding: $20,000.

FRANKE, MILTON E., (ENY)

“Passive and Active Control of Separated and Transitional Flows,” Sponsor: DAGSI, Funding: $100,038.

GOLTZ, MARK N., (ENV)


“In-Situ Bioremediation of Perchlorate in Groundwater,” Sponsor: SERDP, Funding: $50,000.
“In Situ Bioremediation of Perchlorate in Groundwater,” Sponsor: CRADA Salary Fund, Funding: $17,100.


GREINER, Maj MICHAEL A., (ENV)

GRIFFIS, Maj STANLEY E., (ENS)

GUNSch, GREGG H., (ENG)


GUSTAFSON, STEVEN C., (ENG)
“Low Voltage NLO Polymer Photonics,” Sponsor: DAGSI, Funding: $14,615.


HARITOS, GEORGE K., (ENY)

HENGehOLD, ROBERT L., (ENP)


HILL, Lt Col RAYMOND R., (ENS)


Huffines, Maj GARY R., (ENP)

HUGHSON, Lt Col MONTGOMERY C., (ENY)

“Analysis of Choking Effects for Lattice Fin Configurations,” Sponsor: AFRL/MNAV, Funding: $10,000.
JACOBS, Lt Col TIMOTHY M., (ENG)


JACQUES, Lt Col DAVID R., (ENY)

“Design and Analysis of Active Flow Control,” Sponsor: AFRLVA, Funding: $15,000.

“Cooperative Behavior and Control for Autonomous Munitions,” Sponsor: AFRL/MN, Funding: $10,000.


“Unmanned Aerospace Vehicle,” Sponsor: AFRL/NACA, Funding: $15,000.

JODOIN, Lt Col VINCENT J., (ENP)


KHAROUFEH, JEFFREY P., (ENS)

“The Modeling and Analysis of Link and Path Travel Times,” Sponsor: CRADA Salary Fund, Funding: $9,667.

KING, PAUL I., (ENY)


“A Dimple Array for Control of Turbine Vane Separation At Low Reynolds Number,” Sponsor: AFRL/PRT, Funding: $5,000.


“IPA-Dr. Subramanian,” Sponsor: AFRL/PRF, Funding: $28,081.


KLADITIS, Capt PAUL E., (ENG)


“MEMS RF Alloy Contact Switches and Symbiotic Packaging,” Sponsor: AFRL/MLB, Funding: $40,000.
LAMONT, GARY B., (ENG)


LaPUMA, Col PETER T., (ENV)


LOTT, Lt Col JAMES A., (ENG)


MAGEE, Maj ERIC P., (ENG)


MALL, SHANKAR, (ENY)


“Fretting Fatigue Studies,” Sponsor: AFRL/MLLN, Funding: $150,000.


MARCIANIAK, Lt Col MICHAEL A., (ENP)

“Amorphous and Thin-Film CuIn1-xSe2 (CIGS) Solar Cell Research,” Sponsor: AFRLVSSV, Funding: $10,000.

MATHIAS, Maj KARL S., (ENG)

“Composable Simulation Technologies Research,” Sponsor: DMSO, Funding: $50,000.

McAREE, Maj PAUL W., (ENS)


MILLER, Lt Col MIKEL M., (ENG)

“MEMS Gyro and Direct Correlator Output Processing GPS Receiver,” Sponsor: AFRL/SNAR, Funding: $12,000.


“746th Support, Research and GNC Laboratory Upgrades,” Sponsor: 476 TS, Funding: $30,000.

“Ultra-Wide-Band Indoor Geolocation Research Capabilities,” Sponsor: 46th TG/XPR, Funding: $15,000.

MILLER, J. O., (ENS)


MOORE, JAMES T., (ENS)


OXLEY, MARK E., (ENC)

“Model-Based Object Recognition Using Multiple Sensor Modalities and Invariant Techniques,” Sponsor: DAGSI, Funding: $73,000.


“The Fusion of Multiple Classifiers,” Sponsor: AFRL, Funding: $19,189.

PACHTER, MEIR N., (ENG)

“Cooperative Behavior and Control for Autonomous Munitions,” Sponsor: AFRL/MNGN, Funding: $10,000.

“Unmanned Aerospace Vehicle,” Sponsor: AFRL/NACA, Funding: $15,000.

“Advanced Target Tracking Research,” Sponsor: AFRL/SNAT, Funding: $15,000.


PALAZATTO, ANTHONY N., (ENY)

“Model Aided Damage Detection in Composite Structures,” Sponsor: AFRLVA, Funding: $64,000.


“Intergovernmental Personnel Act - Dr. Lanning (May-Aug 02),” Sponsor: AFRL/MLLN, Funding: $34,903.

“Evaluation of Coatings Applied To a Dummy Blade,” Sponsor: AFRL/PR, Funding: $20,000.00.
   Sponsor: DAGSI, Funding: $83,098.00.


**PERRAM, GLEN P., (ENP)**


“High-Temperature Superconducting Wires for Power Generation: Pulsed Laser Deposition Plume Dynamics,”


“High Temperature Superconducting Wires for Power Generation. Pulsed Laser Deposition Plume Dynamics,”
   Sponsor: CRADA Salary Fund, Funding: $11,439.

“Saturation Laser Spectroscopy for Measuring the Spatially-Resolved Temperature in the Supersonic Nozzle of a

**PETROSKY, LTC JAMES C., (ENP)**


“Studies and Educational Activities in Applied Nuclear Sciences,” Sponsor: DTRA, Funding: $90,000.

“Characterization of Radiation Effects on SiC Materials and Devices,” Sponsor: CRADA Salary Fund, Funding:
   $8,284.

“Studies On the Effects of Nuclear Environments On Equipment and Personnel,” Sponsor: DTRA, Funding:
   $1,647.

**QUINN, DENNIS W., (ENC)**


**RAINES, RICHARD A., (ENG)**

“Resource Support for the AFIT Center of Academic Excellence in Information Assurance,” Sponsor: NSA,
   Funding: $15,400.

“AFIT/ENG Wireless Network Laboratory,” Sponsor: AFIWC, Funding: $20,000.

“Security and Operational Compatibility … Local Area Networks,” Sponsor: CRADA Salary Fund, Funding:
   $30,653.

“Travel to the National Colloquium for Information Systems Security,” Sponsor: CRADA Salary Fund, Funding:
   $3,500.
RAQUET, Maj JOHN F., (ENG)


REED, Maj TIMOTHY S., (ENV)


REHG, Maj MICHAEL, (ENV)


ROH, WON B., (ENP)


SCOTT, Maj MICHAEL B., (ENP)


SPENNY, CURTIS H., (ENY)


TEMPLE, MICHAEL A., (ENG)


TRAGRESSER, STEVEN G., (ENY)


TUTTLE, RONALD F., (ENP)

“Innovative Measurement and Signature Intelligence (MASINT) …,” Sponsor: CRADA Salary Fund, Funding: $2,776.

WEEKS, DAVID E., (ENP)
“Nonadiabatic Molecular Reaction Dynamics of B + H2,” Sponsor: AFOSR/PIF, Funding: $30,480.

WILEY, Capt VICTOR D., (ENS)
“Advanced Assignment and Scheduling Concepts,” Sponsor: CRADA Salary Fund, Funding: $8,000.

WOOD, AIHUA K., (ENC)


YEO, YUNG KEE, (ENP)


3.5 REFEREED JOURNAL PUBLICATIONS

[*Denotes multiple faculty authors.]

AGNES, GREGORY S., (ENY)


BIROS, Lt Col DAVID P., (ENV)


BAKER, WILLIAM P., (ENC)


BALDWIN, Maj RUSTY O., (ENG)


BAUER, KENNETH W., JR., (ENS)


BLECKMANN, CHARLES A., (ENV)


BRADY, Lt Col STEPHAN P., (ENS)

BURGGRAF, LARRY W., (ENP)


CHAMBAL, Capt STEPHEN P., (ENS)


Chambal, S., M. Shoviak (MS Student), and A. Thal. “Decision Analysis Methodology to Evaluate Integrated Solid Waste Management Alternatives,” Environmental Modeling and Assessment, (October 2001).

CHRISSIS, JAMES W., (ENS)


CUNNINGHAM, WILLIAM A., (ENS)


NOTE: Winner of most significant article for the issue (Winter 2001).


DECKRO, RICHARD F., (ENS)


**DELLA-ROSE, Maj DEVIN J., (ENP)**


**ENGLAND, Maj ELLEN, (ENV)**


**GOLTZ, MARK N., (ENV)**


**GREINER, Maj MICHAEL A., (ENV)**

GUNSCH, GREGG H., (ENG)


GUSTAFSON, STEVEN C., (ENG)


HALE, Capt TODD B., (ENG)


HEMINGER, ALAN R., (ENV)


HENGEOHLD, ROBERT L., (ENP)


HILL, Lt Col RAYMOND R., (ENS)


**HOLT, Maj DANIEL T. (ENV)**


**HOUPIIS, CONSTANTINE H., (ENG)**


**HUFFINES, Maj GARY R., (ENP)**


**KAROUFEH, JEFFREY P., (ENS)**


**KLADITIS, Capt PAUL E., (ENG)**

LAPUMA, Lt Col PETER T., (ENV)


LAMONT, GARY B., (ENG)


LIEBST, BRADLEY S., (ENY)


LOTT, Lt Col JAMES A., (ENG)


MALL, SHANKAR, (ENY)


**MAYBECK, PETER S., (ENG)**


**McAREE, Maj PAUL, (ENS)**


**MILLER, Lt Col J.O., (ENS)**


**MOORE, JAMES T., (ENS)**


**MUCZYK, JAN P., (ENV)**


**OXLEY, MARK E., (ENC)**


PACHTER, MEIR, (ENG)


PALAZOTTO, ANTHONY N., (ENY)


PERRAM, GLEN P., (ENP)


RAINES, RICHARD A., (ENG)


RAQUET, Maj JOHN F., (ENG)


REED, Maj TIMOTHY S., (ENV)

REHG, Maj MICHAEL T., (ENV)

ROH, WON B., (ENP)

SHELLEY, MICHAEL L., (ENV)

TEMPLE, MICHAEL A., (ENG)


TRAGESSER, STEVEN G., (ENY)

WARD, Maj MARK A., (ENV)

WEEKS, DAVID E., (ENP)


WIESEL, WILLIAM E., (ENY)


WHITE, Maj EDWARD D. III, (ENC)


WOOD, AIHUA W., (ENC)


YEO, YUNG KEE, (ENP)


3.6 OTHER PUBLICATIONS

[*Denotes multiple faculty authors.]

ADVANCED STUDIES IN AIR MOBILITY

(NOTE: The Graduate Mobility Operations (GMO) non-thesis management program is a component of Air Mobility Command’s Advanced Study of Air Mobility executive development program. Students in the GMO program write graduate research papers supporting topics of interest to AMC.)

Barnes, Kyler A. *Theater Airlift Liaison Officer Command and Control*. Faculty Advisor: Mark Ward. DSN 785-3636 x4742. Sponsor: AMC/DOO.

Beam, Charles E. *Evaluation of ASAM--Has it properly prepared our future mobility leaders?*. Faculty Advisor: Daniel Holt. DSN 785-3636 x4742. Sponsor: AMWC/WCDO.

Buente, Robert A. *Determining Performance Requirements for the Advanced Theater Transport*. Faculty Advisor: William A. Cunningham. DSN 785-6565 x4283. Sponsor: AMC/XPX.

Eungard, Brad J. *AT2000 Objectives Inline with SDMI and Velocity Management?*. Faculty Advisor: William A. Cunningham. DSN 785-6565 x4283. Sponsor: AMC/XPX.

Flaugher, Gerald W. *Crew Ratio Dilemma – What is the Best KC-135R Crew Ratio Given Manning Constraints*. Faculty Advisor: Stephan Brady DSN 785-6565 x4367. Sponsor: AMC/XPX.

Hansen, Erik W. *Evaluating C-17 Dirt Landing Capability -- An Off-Road Map*. Faculty Advisor: Ray Hill. DSN 785-6565 x4327. Sponsor: AMC/XPR.


Pappas, Zannis. *Effects of Galileo Constellation to AMC Ops*. Faculty Advisor: James Moore. DSN 785-6565 x4337. Sponsor: AFSPC/DO.


Salley, Russell S. *Integration of Smart Tanker Concept into Combat Operations*. Faculty Advisor: David Biros. DSN 785-3636 x4826. Sponsor: AC2ISRC/C2M.


Vanderbach, Harry W. *Potential Tanker Basing Options for South Asia*. Faculty Advisor: Lt Col Stephen Swartz. DSN 785-6565 x4285. Sponsor: AMC/XPY.

Van Noord, Jonathan R. *A Model to Determine the Appropriate SAM Fleet*. Faculty Advisor: James Moore. DSN 785-6565 x4337. Sponsor: WHMO.

White, Jeffrey M. *Viability of Boeing 767 as KC-135 Replacement*. Faculty Advisor: Mike Rehg. DSN 785-3636 x4711. Sponsor: 62 AW/CCR.
ANTHENIEN, Capt RALPH A., (ENY)


BALDWIN, Maj RUSTY O., (ENG)


BAUER, KENNETH W., JR., (ENS)


*Rogers, Steven K., Matthew Kabrisky, Kenneth Bauer, and Mark Oxley. “Computing Machinery and Intelligence Amplification,” Proceedings of the IEEE World Conference on Computational Intelligence, (invited) plenary paper (on compact disk), Honolulu, HI, May 2002.

BIROS, Lt Col David P., (ENV)


CANTFIELD, Lt Col ROBERT A., (ENY)


CLAYPOOLE, Maj ROGER L. JR., (ENG)


CHILTON, LtCol LAWRENCE K., (ENC)


DECKRO, RICHARD F. (ENS)


FRANKE, MILTON E., (ENY)


GOLTZ, MARK N., (ENV)


GUNSCH, GREGG H., (ENG)


GUSTAFSON, STEVEN C., (ENG)


**HALE, Capt TODD B., (ENG)**


**HARTRUM, THOMAS C., (ENG)**


**HEMINGER, ALAN R., (ENV)**


**HENGEBLVE, ROBERT. L., (ENP)**


**HILL, Lt Col RAYMOND R., (ENS)**


**HOLT, Maj DANIEL T., (ENV)**

HUGHSON, Lt Col MONTGOMERY C., (ENY)


JACOBS, Lt Col TIMOTHY M., (ENG)


KING, PAUL I., (ENY)


KLADITIS, Capt PAUL E., (ENG)


LAMONT, GARY B., (ENG)


LIEBST, BRADLEY S., (ENY)


LOTT, Lt Col JAMES A., (ENG)


MAGEE, Maj ERIC P., (ENG)


MALL, SHANKAR, (ENY)


MAPLE, Lt Col RAYMOND C., (ENY)


MARCINIAK, Lt Col MICHAEL A., (ENP)


MATHIAS, Lt Col KARL S., (ENG)


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MAYBECK, PETER S., (ENG)


MCMULLAN, Maj RICHARD J., (ENY)


MILLER, Lt Col MIKEL, (ENG)


OXLEY, MARK E., (ENC)


**PACHTER, MEIR, (ENG)**


**PALAZOTTO, ANTHONY N., (ENY)**


**PERRAM, GLEN. P., (ENP)**


RAINES, RICHARD A., (ENG)


RAQUET, Maj JOHN F., (ENG)


REED, Maj TIMOTHY S., (ENV)


REEDER, MARK F., (ENY)


ROH, WON B., (ENP)


SHELLEY, MICHAEL L., (ENV)


SPENNY, CURTIS H., (ENY)


TEMPLE, MICHAEL A., (ENG)


THAL, Lt Col ALFRED E., JR., (ENV)


TRAGESSER, STEVEN G., (ENY)


TERZUOLI, ANDREW J., JR., (ENG)


WARD, Maj MARK A., (ENV)


WEEKS, DAVID E., (ENP)


WIESEL, WILLIAM E., (ENY)


WOOD, AIHUA W., (ENC)


WOOD, Maj WILLIAM D., (ENG)


3.7 SUBSTANTIAL CONSULTATIONS

[*Denotes duplicate entry, multiple faculty authors.]

BALDWIN, Maj RUSTY O., (ENG)


BRADY, Lt Col STEPHAN P., (ENS)

Brady, Stephan P. “Investigating the impact of entrepreneurial leadership styles on military supply chains,” Research conducted in conjunction with research sponsored by the University of Arkansas. Conducted in association with Dr. Lisa Williams, Garrison Endowed Chair in Supply Chain Management.

CANFIELD, Lt Col ROBERT A., (ENY)


CLAYPOOLE, Jr., Maj ROGER, (ENG)

Claypoole, Roger L. Consultant, Environmental Security Compliance Technology Program, Environmental Management Directorate, Hill AFB UT.

CUNNINGHAM, WILLIAM A., (ENS)

Cunningham, William A. “An Analysis of Airfield Throughput at Elemendorf Air Force Base Using the Airfield Simulation Tool,” sponsored by AFOSR.

DECKRO, RICHARD F., (ENS)

Deckro, Richard F. Member, CNA Weapons Effectiveness Working Group: Chair, Methodology Sub-Group.

DELLA-ROSE, Maj DEVIN J., (ENP)


FRANKE, MILTON E., (ENY)


Franke, Milton E., William Walter, HYBRICRAFT Technology. Boundary layer research and microelectromechanical systems, MEMS (Dr. K. Ghia, University of Cincinnati, Cincinnati, Oh; Dr. Richard Rivir, AFRL, Wright-Patterson AFB OH; Mike Daniel and Gary Laughlin, AFIT laboratories; and Lt Col Cowan, AFRL, Wright-Patterson AFB OH). Dr. Patrick McDaniel, AFRL, Kirtland AFB NM, Alternate energy source for propulsion. Paper reviews: American Society of Engineering Education and International Journal of Heat and Mass Transfer.

GODA, Maj MATTHEW, (ENG)

Goda, M. E. Consultant with the ABL Technology Branch on ABL tracking and compensation, Sponsor: AFRL/DEBS.

GOLTZ, MARK N., (ENV)


GROVES, Maj CLARK M., (ENP)

*Groves, Clark M., Raymond R. Hill, and John O. Miller. Substantial consultations with Dr. Francis Quek of Wright State University to establish a collaborative team pursuing a major research grant from the Advanced Research and Development Activity related to exploitation of information content in video-taped interactive group discourse in the military domain, to convert such archived planning behavior into indexed and accessible information, July 2002 - present.

*Perram, Glen P., Michael A. Marciniak, and Clark M. Groves. Managed three modeling and simulation contracts for the High Energy Laser Joint Technology Office and held substantial consultations with its members and customers, July 2002 - present.

GUNSCHE, GREGG H., (ENG)


GUSTAFSON, STEVEN C., (ENG)


HAVRILLA, MICHAEL J., (ENG)


HEMINGER, ALAN R., (ENV)

**JACOBS, Lt Col TIMOTHY M., (ENG)**

Jacobs, T. M. “Collaborative Software Visualization,” $21K, Sponsor: AFOSR.

Jacobs, T. M. “Software Architectures for Distributed Command and Control,” Sponsor: AFRL/IF.

Jacobs, T. M. “Integrating Ontologies Into Agent Based Systems,” Sponsor: AFRL/IF.


**HUGHSON, Lt Col MONTGOMERY C., (ENY)**

Hughson, M. C. and Capt Andrew Lofthouse. “High Speed Test Track,” 846th Test Squadron, 46th Test Group, Holloman AFB NM, Hypersonic flow field about test sled research.

Hughson, M. C. and Dr. Jose Camberos. AFRL/VA, Wright-Patterson AFB, OH: CEM/MHD for aerospace engineering education and research.

Hughson, M. C. and Maj David Lucia. AFRL/VA, Wright-Patterson AFB, OH: High-speed nozzle shaping using pulsed injection flow control research code development.


Hughson, M. C. and David Gebbie. AFRL, Wright-Patterson AFB, OH: Formation flight for UAVs to reduce drag and improve endurance performance.

Hughson, M. C. and Capt Jacob Freeman. University of Cincinnati OH, Flow control using jets to delay vortex breakdown analysis using CFD.


*Hughson, M. C. and Dr. Bradley S. Liebst. AFIT/NPS Rationalization Joint Working Group, Pentagon, Aeronautical, astronautical and systems engineering and space operations degree program curriculum, faculty, and research report.

Hughson, M. C. and Dr. Klaus Hoffmann. DURIP research proposal review and letter of support, Department of Aerospace Engineering, Wichita State University, KS.

Hughson, M. C. and Dr. Jean-Francois Dietiker. DEPSCoR research proposal review and letter of support, Department of Aerospace Engineering, Wichita State University, KS.

Hughson, M. C. and Maj John Antonnen. AFRL/MN, Eglin AFB, FL: Lattice grid fins for tail control of missiles in transonic flow research.

**KLADITIS, Capt PAUL E., (ENG)**

Kladitis, P. E. “A Red Team Member for Kearfott/IC Sensors MVBM MEMS Inertial Measurement Unit Fabrication Audit,” Sponsor: AFRL/SNRP and DARPA/MTO MEMS IMU development project.

Kladitis, P. E. and R. Coutu. “Feasibility Study on MEMS Inertial Measurement Units (IMU),” Sponsor: AFRL/HECV.
LAMONT, GARY B., (ENG)


LARIVEE, DAVID R., (ENS)


LaRivee, David R. Sponsored by Institute for National Security Studies to investigate the coercive potential of force application from space.

LOTT, Lt Col JAMES A., (ENG)


LOWTHER, Lt Col RONALD P., (ENP)

Lowther, Ronald P. Managed contractual research program for HQ Air Education and Training Command on data mining for weather education, May 2002 - present.

MARCINIAK, Lt Col MICHAEL A., (ENP)

*Perram, Glen P., Michael A. Marciniak, and Clark M. Groves. Managed three modeling and simulation contracts for the High Energy Laser Joint Technology Office and held substantial consultations with its members, July 2002 - present.

MATHIAS, Maj KARL S., (ENG)

Mathias, K. “Advanced Technology Repositories”. This is a research project to develop intelligent imagery repositories for the National Air Intelligence Center (NAIC), $26K, Sponsor: AFOSR.


Mathias, K. “Information Retrieval Environments”, Developed scenario building tools for simulation, $10K, Sponsor: AFRL/SNZW.

MAYBECK, PETER S., (ENG)


MILLER, Maj MIKEL M., (ENG)

Miller, M. M. Technical consultant for AFRL/MN’s MINT (ultra-tight coupling using a MEMS IMU) program.

Miller, M. M. “Tight Integration of Inertial Measurement Unit (IMU) and Global Positioning System (GPS) Receivers for Autonomous Vehicle Guidance, Navigation, and Control (GNC),” $13,843, Sponsor: AFOSR.
Miller, M. M. “Global Positioning System (GPS) and GPS Integration, Vulnerabilities Analysis, and GPS Modernization,” $30K, Sponsor: 746th Test Squadron, HAFB NM.

Miller, M. M. “MEMS Gyro and Direct Correlator Output Processing GPS Receiver,” $12K, Sponsor: AFRL/SNAR.

Miller, M. M. “Ultra Wideband Indoor Geolocation,” $15K, Sponsor: 746th Test Squadron HAFB NM.

MUCZYK, JAN P., (ENV)

Muczyk, Jan P. Developed a proposal for a joint venture between AFIT and the Fisher College, The Ohio State University, for an Executive Education Program for AFMC.

Muczyk, Jan P. Developed MOU between AFIT and DAU regarding collaboration between the two organizations.

Muczyk, Jan P. Member of Committee to create the Academic Component of Systems Engineering Institute. Not consultation as such, but required a good deal of time.

PACTHER, MEIR, (ENG)

Pachter, M. “Kalman Filtering,” $10K, Sponsor: AFRL/SNAT.

Pachter, M. “Cooperative Control,” $15K, Sponsor: DAGSI.

Pachter, M. “Cooperative Control for UAVs,” $15K, Sponsor: AFRL/VACA

Pachter, M. “Cooperative Control for Air to Ground Munitions,” $5K, Sponsor: DARPA.

Pachter, M. “Project SHARED,” $15K, Sponsor: DARPA.


Pachter, M. consultant to AFRL/VACA and AFRL/SNAT.

PERRAM, GLEN P., (ENP)

Perram, Glen P. Managed three contractual research programs for the Missile Defense Agency on advanced chemical lasers, June 2002 - present.

*Perram, Glen P., Michael A. Marciniak, and Clark M. Groves. Managed three modeling and simulation contracts for the High Energy Laser Joint Technology Office and held substantial consultations with its members, July 2002 - present.

RAINIES, Maj RICHARD A., (ENG)

Rainies, R. A. “Resource Support for the AFIT Center of Academic Excellence in Information Assurance”, $250K, National INFOSEC Education and Training Program (NIETP), Sponsor: NSA.


RAQUET, Maj JOHN F., (ENG)


REHG, Maj MICHAEL T., (ENV)


Rehg, Michael T. Facilitator, ASC/YTA Strategic Planning Offsite, April 2002.

SWARTZ, Lt Col STEPHEN M., (ENS)

Swartz, Stephen M., and Capt Glen A. Mingee. Due to low traffic counts and limited cargo missions, the 88th LG/CC at Wright-Patterson AFB had concern that his personnel could lose their warrior skill proficiency. This could be of special concern should Wright-Patterson (W-P) be activated as an Aerial Port of Embarkation (APOE). The 88th LG/CC solicited assistance from the Air Force Institute of Technology (AFIT) to determine his airfield’s current capacity and capabilities for a subsequent effort to solicit new business. New business can provide 88 LG personnel with invaluable training and experience to ensure they are ready for APOE activation, while potentially alleviating congested aerial ports across the Air Force. To determine W-P’s current capacity, AFIT employed the Airfield Simulation Tool (AST) of the United States Transportation Command’s Aerial Port of Debarkation Model. Several modifications and adaptations were made to allow the model to be used for this project’s intent. After 28 different simulations modeling W-P’s current resources, AST determined the airfield’s maximum cargo throughput at either 60 tons every day at the East Ramp or 60 tons every other day at the Hot Cargo Pad.

TEMPLE, MICHAEL A., (ENG)


TUTTLE, RONALD F., (ENP)

Tuttle, Ronald F. Managed U.S. Army funding of $700K and in collaboration with Riverside Research Institute, which developed and executed first MASINT IR/SAR Certificate Program.

Tuttle, Ronald F. Managed under NAIC funding of $30K, preparations for the Distinguished Review Board for the MASINT program at AFIT as part of the Center for MASINT Studies and Research.

WIESEL, WILLIAM E., (ENY)

Wiesel, William E. “Space Maneuver Vehicle Orbital Mission Planner,” unpublished software, being developed for (and now supported by) AFRL/VS. Two TDY trips, and three weeks work during the reporting interval.

WOOD, Maj WILLIAM D., (ENG)


Wood, W. “Antenna Placement Optimization and High-Impedance Ground Plane Antenna Integration,” Sponsor: AFRL/SNR.
3.8 PRESENTATIONS

[*Denotes duplicate entry, multiple faculty authors.]

ABRAMSON, Maj MARK A., (ENC)


BAILEY, WILLIAM F., (ENP)


BALDWIN, Maj RUSTY O., (ENG)


**BARTCZAK, Lt Col SUMMER E., (ENV)**


**BENTON, Maj R. NICOLE, (ENC)**


**BIROS, Lt Col DAVID P., (ENV)**


**BURGGRAF, LARRY W., (ENP)**


**CANFIELD, Lt Col ROBERT A., (ENY)**


CHAMBAL, Capt STEPHEN P., (ENS)


CHILTON, Lt Col LAWRENCE K., (ENC)

Chilton, Lawrence K. “Stable Finite Element Methods,” Mathematics Department Colloquium (Invited Speaker), Texas Tech University, Lubbock Texas, November 2001

CHRISSIS, JAMES W., (ENS)


CLAYPOOLE, Maj ROGER L. JR., (ENG)

“AFIT Warrior Brief”, presented to Air University and Air Force Director of Personnel, Wright-Patterson AFB OH, September 2002; presented to Commander, Air Education and Training Command, Wright-Patterson AFB OH, August 2002; presented to ELINT Board of Visitors, Wright-Patterson AFB OH, July 2002; presented to Secretary of the Air Force along with Commander, Air University; Vice Commander, Air Force Material Command; Air Force Director of Personnel; and Commander, Air Force Research Laboratories, Wright-Patterson AFB OH, April 2002; presented to Dean of Faculty, Air Force Academy, Wright-Patterson AFB OH, April 2002; presented to Superintendent, Naval Post Graduate School, Wright-Patterson AFB OH, October 2001.


CUNNINGHAM, WILLIAM A., (ENS)


Cunningham, William A. Conducted 5 seminars for AFIT/LS on strategic mobility and activity based costing for LOG 199, LOG 399, LOG 499, and LOG 092.

DECKRO, RICHARD F., (ENS)


DELLA-ROSE, Maj DEVIN J., (ENP)

Della-Rose, Devin J. “The Space Environment, Space Weather Storms, and Effects on Industry,” Address to the Cincinnati section of the Institute of Electrical and Electronics Engineers (IEEE), Cincinnati OH, 24 Jan 2002.


ENGLAND, Lt Col ELLEN, (ENV)


FRANKE, MILTON E., (ENY)


GOLTZ, MARK N., (ENV)


GUNSCH, GREGG H., (ENG)


GUSTAFSON, STEVEN C., (ENG)


HALE, Capt TODD B., (ENG):

HARTRUM, THOMAS C., (ENG)


HEMINGER, ALAN R., (ENV)


HENGHEHOLD, ROBERT L., (ENP)


HILL, Lt Col RAYMOND R., (ENS)


HOLT, Maj DANIEL T., (ENV)


HUFFINES, Maj GARY R., (ENP)


HUGHSON, Lt Col MONTGOMERY C., (ENY)


JACOBS, Lt Col TIMOTHY M., (ENG)


KHAROUFEH, JEFFREY P., (ENS)


KING, PAUL I., (ENY)


KLADITIS, Capt PAUL E., (ENG)


LAMONT, GARY B., (ENG)


LARIVEE, Col DAVID R., (ENS)


LAPUMA, Lt Col PETER T., (ENV)


LIEBST, BRADLEY S., (ENY)


LOTT, Lt Col JAMES A., (ENG)


**MAPLE, Lt Col RAYMOND C.,** (ENY)


**MARCINIAK, Lt Col MICHAEL A.,** (ENP)


**MATHews, KIRK A.,** (ENP)


**MAYBECK, PETER S.,** (ENG)


MCAREE, PAUL W., (ENS)


MILLER, Lt Col J. O., (ENS)


MILLER, Lt Col, MIKEL, (ENG)


MOORE, JAMES T., (ENS)


MUCZYK, JAN P., (ENV)

Muczyk, Jan P. “Extending the Bounds of Managerial Discretion: Or It Is All About Alignment,” *Academy of Business Administration*, Warsaw, Poland, August 7-13, 2002.


Muczyk, Jan P. “Lessons Learned By An Expatriate Living in the Middle East,” SIE Induction Dinner, April 4, 2002.

OXLEY, MARK E., (ENC)


PACHTER, MEIR, (ENG)


**PALAZOTTO, ANTHONY N., (ENY)**


PERRAM, GLEN P., (ENP)


PYATI, VITTAL, (ENG)


QUINN, DENNIS W., (ENC)


RAINES, Maj RICHARD A., (ENG)


RAQUET, Maj JOHN F., (ENG)


REED, Maj TIMOTHY S., (ENV)


REHG, Maj MICHAEL T., (ENV)

REYNOLDS, DANIEL E., (ENC)

ROH, WON B., (ENP)


SHELLEY, MICHAEL L., (ENV)


SPENNY, CURTIS H., (ENY)


TEMPLE, MICHAEL A., (ENG)


Temple, M. A. “Interferometric Radar Clutter Suppression,” Joint Air Force Research Laboratory (AFRL)/Dayton Area Graduate Studies Institute (DAGSI) Symposium, Wright State University, April 2002.

TERZUOLI, ANDREW J., JR., (ENG)


**WALTERS, Lt Col MICHAEL K., (ENP)**


**WEEKS, DAVID E., (ENP)**


**WIESEL, WILLIAM E., (ENY)**


**WOOD, AIHUA W., (ENC)**


WOOD, Maj WILLIAM D., (ENG)


YEO, YUNG KEE, (ENP)


3.9 OTHER SIGNIFICANT PROFESSIONAL ACTIVITIES

AGNES, Maj GREGORY S., (ENY)


BONS, Maj Jeffrey P., (ENY)


BRADY, Lt Col STEPHAN P., (ENS)

Member, Collaborative Planning, Forecasting and Replenishment (CPRF) Committee, Voluntary Interindustry Commerce Standards (VICS) Association, 2000-Present.


BRIDGMAN, CHARLES J., (ENP)


BURGGRAF, LARRY W., (ENP)


CANFIELD, Lt Col ROBERT A., (ENY)

Executive Council Secretary, American Institute of Aeronautics and Astronautics (AIAA) Dayton-Cincinnati Section.

Awards Chairman, AIAA Multidisciplinary Design Optimization Technical Committee.

CHRISSIS, JAMES W., (ENS)

Session Organizer and Moderator for two sessions at the Miami INFORMS Annual Meeting, November 2001.


Manuscript Reviewer, Military Operations Research.

Nominated to AIAA Multidisciplinary Design Optimization (MDO) Technical Committee (TC).
CLAYPOOLE, Maj ROGER L. JR., (ENG)

Elected treasurer of the IEEE Dayton Section.
Served as Secretary of the IEEE Dayton Section.
Served as Chairman, Signal Processing Society, Dayton Chapter.
Elected Secretary, Air Force Association, Wright-Memorial Chapter.
Served as Vice President for Communications, Air Force Association, Wright-Memorial Chapter.
Served as Secretary, AFIT/EN Faculty Council.

CUNNINGHAM, WILLIAM A., (ENS)

Board of Directors - Tri Rivers Waterway Development Association.

DECKRO, RICHARD F., (ENS)

Editor, Military Operations Research.
Area Editor, Service Systems, Computers and Industrial Engineering.
Editorial Advisory Board of Computer and Operations Research.
Editorial Advisory Board of IEEE Transactions on Engineering Management.
Invited participant in the 8th Annual Chairman, Joint Chiefs of Staff (CJCS)-directed Joint Peace Operations Seminar 2002 - ”The Power of Information in Peace Operations” at the Peacekeeping Institute, Carlisle Barracks.
Secretary/Treasurer, Military Applications Society, INFORMS.
Member, MORS Publication Committee.
Track Chair, Cases, Workshops, and Special Sessions, Western DSI.

FRANKE, MILTON E., (ENY)

Chair, Committee on Organization and Rules (COR). COR is a committee of the Board of Governors, American Society of Mechanical Engineers (ASME International).
ASME International representative to American Association for the Advancement of Science.
Member of the AIAA Technical Committee on Weapon Systems Effectiveness.
GOLTZ, MARK N., (ENV)
City of Beavercreek Environmental Advisory Committee.
Consulting Associate Professor at Stanford University.

“Laboratory Investigations to Analyze Palladium (Pd) Catalyzed Transformation of Nitro Aromatic Compounds (NACs) for Groundwater Treatment,” Effective Date: 29 October 2002, Estimated Completion Date: 28 October 2004, AFIT Technical Lead: Dr. Mark N. Goltz, USAF CRADA #02-AFIT-04, Partner: Wright State University.

“Remediation of Trichloroethylene Sites,” Effective Date: 4 May 2000, Completion Date: 4 July 2002, AFIT Technical Lead: Dr. Mark N. Goltz, USAF CRADA #00-AFIT-03, Partner: Wright State University.

GREINER, Maj MICHAEL A., (ENV)
Guest Co-Editor, Journal of Cost Analysis and Management.
Guest Co-Editor, Journal of Public Procurement.
Referee, Decision Sciences Institute (DSI), National Conference proceedings.

GUNSCH, GREGG H., (ENG)
Invited panel member on “Directions of Intrusion Detection” at the 3rd Annual CERIAS Research Symposium, Purdue University, West Lafayette IN, April 2002.

GUSTAFSON, STEVEN C., (ENG)
Associate Editor of the Journal of Optical Engineering.

HAVRILLA, MICHAEL J., (ENG)
Reviewer for IEEE Transactions on Education.

HENGHEOLD, ROBERT L., (ENP)
Member of the Executive Committee and Honors and Awards Chairman of the Ohio Section of the American Physical Society.

HILL, Lt Col RAYMOND R., (ENS)
Organizer for Military Track, 2002 Winter Simulation Conference.
Named Military Track Coordinator for 2003 Winter Simulation Conference.

Associate Editor, Military Operations Research.


**HOUPIS, CONSTANTINE H., (ENG)**

Lecture Series Director for the NATO/RTO Lecture Series 236, which has been approved, to be given in May, 2003, in Europe and in the U.S.

Lecture Series Director for the proposed NATO/RTO Lecture Series entitled, “Partnership for Peace”, (PFP) to be given in Europe in 2004.

**HUGHSON, Lt Col MONTGOMERY C., (ENY)**

Established Computational Fluid Dynamics Laboratory with the purchase of a Beowulf-class high-performance computer with numerous graphics workstation peripherals for aerospace engineering basic and applied research in modeling and simulation, January 2002.

Session Chair, CFD (Computational Fluid Dynamics) Techniques III, Dayton-Cincinnati Aerospace Science Symposium, Dayton OH, March 2002.

Completed Air War College by correspondence, the final phase of Professional Military Education (PME) for Air Force officers, through Air University at Maxwell AFB, AL, March 2002.

**KHAMROUFEH, JEFFREY, (ENS)**

Secretary, Cincinnati/Dayton Chapter of INFORMS (01-02) Refereed four archival journal articles in the past year.


**KLADITIS, Capt PAUL E., (ENG)**


Secretary, IEEE Dayton OH.

**LAPUMA, Lt Col PETER T., (ENV)**

Reviewer for International Life Cycle Assessment Journal.

Session Chair for 2002 Air and Waste Management conference.

**LIEBST, BRADLEY S., (ENY)**

Served on the Dayton-Cincinnati AIAA Executive Council.

Served on 2002 AIAA Cincinnati-Dayton Aerospace Symposium Committee.
MARCINIAK, Lt Col MICHAEL A., (ENP)


MAYBECK, PETER S., (ENG)

Chaired the IEEE Dayton Section Student Branch Cross-Fertilization meeting, enhancing the communication among area colleges and the Dayton Section.

Dayton Section IEEE Student Activities Chairman and a member of the Section’s Executive Committee.

Co-Chair, Kalman Filtering and System Integration Session, ION 58th Annual Meeting, June 2002.

MILLER, Lt Col J. O., (ENS)

Referee, Military Operations Research.

MILLER, Lt Col MIKEL M., (ENG)

Faculty Advisor for AFIT Chapter of Tau Beta Pi.


Institute of Navigation (ION) National Council Member.


MOORE, JAMES T., (ENS)

James T. Moore, Principle Investigator, and Raymond R. Hill, Associate Investigator, received AFOSR Sponsorship for proposal entitled “Application of Meta-heuristics to Air Force Problems”.

Associate editor for Military Operations Research.

Associate editor for Naval Research Logistics.

OXLEY, MARK E., (ENC)

Member, Alumni Board for Department of Mathematics, Physics and Geography, Cumberland College, Williamsburg, KY.


PACHTER, MEIR, (ENG)

Member of AFOSR Review Panel.

Member of AFRL/VACA AFOSR Star Team.
PALAZOTTO, ANTHONY N., (ENY)

Associate Editor of the AIAA journal.

Member of the Advisory Board of Computational Mechanics in High Performance Computing.

PERRAM, GLEN P., (ENP)

“All Pulsed Laser Deposition,” Effective Date: 23 August 2001, Estimated Completion Date: 22 August 2004, AFIT
Technical Lead: Dr. Glen P. Perram, USAF CRADA #02-218-PR-01, Partner: Air Force Research Laboratory and IGC-SuperPower, LLC.


Hosted and chaired the Laser Weapon Modeling and Simulation Workshop, Wright-Patterson Air Force Base, OH on 24-26 September 2002.

RAINES, Maj RICHARD A., (ENG)


Session Chair, 2001 Fall IEEE Vehicular Technology Conference.

Member AFMC/AFIT Communications and Information Technology Special Emphasis Group.

Member AFIT Certificate Program Development Committee.

Faculty Council President, Graduate School of Engineering and Management.

RAQUET, Maj JOHN F., (ENG)

Served as Central Region Executive Vice President of the Institute of Navigation.

Chairman, Institute of Navigation Student Awards Committee.


Member, Editorial Advisory Board and Technical Paper Referee, GPS Solutions.

REED, Maj TIMOTHY S., (ENV)

Peer reviewer for Journal of Contract Management.

Editor of Special issue of Journal of Public Procurement on “Transforming Defense Acquisition”.

Reviewer for Entrepreneurship Division Program paper and symposium submissions, Academy of Management meetings.
RIES, HEIDI R., (EN)

“Collaborative Engineering Graduate Education Over Interactive Video,” Effective Date: 4 August 2000, Completion Date: 3 February 2002, AFIT Technical Lead: Dr. Heidi R. Ries, USAF CRADA #00-AFIT-01, Partner: Ohio University.


“USAF CRADA Between AFIT and Dayton Area Graduate Studies Institute,” Effective Date: 13 January 1994, Estimated Completion Date: 11 January 2004, AFIT Technical Lead: Dr. Heidi R. Ries, USAF CRADA #94-AFIT-02, Partner: Dayton Area Graduate Studies Institute.

SHELLEY, MICHAEL L., (ENV)

Advisory Board, Regional Water and Wastewater Research and Training Center (a local regional consortium of universities and city and county governments sharing funding, coordinating research, and solving environmental engineering challenges).


Postdoctoral Advisor within the National Research Council’s Resident Research Associateships Program.

TERZUOLI, ANDREW J., JR., (ENG)

Chapter Chair for Joint IEEE Societies APS, MTT, GRS.

Classified Session Chair at AUSCANUKUS/NATO Symposium on Passive and Covert Radar (PCR).

Session Chair at IEEE Microwave Symposium.
3.10 SPECIAL AWARDS OR SPECIAL RECOGNITION

3.10.1 FACULTY

BAUER, KENNETH W., (ENS)

CANFIELD, Lt. Col ROBERT, (ENY)
Associate Fellow, American Institute of Aeronautics and Astronautics, January 2000.

CLAYPOOLE, Maj ROGER L., (ENG)
Received the Air Force Association Exceptional Service Award.

DECKRO, RICHARD F., (ENS)

ENGLAND, Maj ELLEN, (ENV)
Volunteer of the Month, Helpers Tutoring Program, Rolla MO, December 2001.

FRANKE, MILTON E., (ENY)
Appointed a Research Advisor by the National Research Council.

GOLTZ, MARK N., (ENV)

HALE, Capt TODD B., (ENG)
IDEA Award #2002-1589, Air Force Patent #6,252,540, “Two-Stage Hybrid Space-Time Adaptive Processing Algorithm”.

HOUPIES, CONSTANTINE H., (ENG)
2002 University of Wyoming Tau Beta Pi Outstanding Engineering Alumnus Award.

LAMONT, GARY B., (ENG)
Eta Kappa Nu Faculty Member of the Year for 2001.

LAPUMA, Lt Col PETER T., (ENV)
Instructor of the Quarter (Winter 2002).

LIEBST, BRADLEY S., (ENY)
Awarded Associate Fellow status for AIAA.
LOWTHER, Lt Col RONALD P., (ENP)


MILLER, Lt Col MIKEL M., (ENG)

Disclosure and Record of Invention, AF Form 1279, “A Novel Electrocardiogram Segmentation Algorithm Using a Multiple Model Adaptive Estimator”.


MOORE, JAMES T., (ENS)

MORS Best Working Group Paper, WG 18 Mobility and Transport Forces.

OXLEY, MARK E., (ENC)

Received Air Force Scientific Achievement Award (IDEA 2001-5617), June 2002.

Received Air Force Scientific Achievement Award (IDEA 2001-5622), June 2002.

Received Air Force Scientific Achievement Award (IDEA 2001-5624), June 2002.

Received Air Force Scientific Achievement Award (IDEA 2001-6872), August 2002.

Received Air Force Scientific Achievement Award (IDEA 2001-6874), August 2002.

PACHTER, MEIR, (ENG)

Nominated for the AFRL/VA 2001 Foulois Award.

Recipient of the 2001 Special Act/Service Award in recognition of contributions in the field of flight control while working in the Control Theory and Optimization Branch of the Air Vehicles Directorate (AFRL/VACA).

RAINES, Maj RICHARD A., (ENG)

Air Force Meritorious Service Medal.

Lieutenant Colonel Charles P. Brothers, Jr. Outstanding Volunteer Service Award.

National Security Agency designated Center of Academic Excellence in Information Assurance Education 2002-2005 – led team that sought and gained prestigious national recognition – one of 36 schools in U. S. recognized.


RAQUET, Maj JOHN F., (ENG)


TEMPLE, MICHAEL A., (ENG)

Senior Member, IEEE.
3.10.2 STUDENTS

BERGREN, SCOTT E., (ENY)


MANFRA, 2D Lt JENNIFER, (ENG)

Armed Forces Communications-Electronics Association (AFCEA) Engineering Research Excellence Award.

PAPAPHOTIS, Flt Lt MATTHEW, (ENG)

Louis F. Polk Award.

POLAT, Lt MURAT, (ENG)

Institute of Navigation Award.

RENFRO, ROB S., (ENS)


SITLER, Capt KEVIN, (ENG)

Association of Old Crows Award.

ZETTERLIND, 2D Lt VIRGIL, (ENG)

Mervin E. Gross Award.
APPENDICES

APPENDIX A FACULTY CREDENTIALS

ABRAMSON, MARK A., Maj, Assistant Professor of Mathematics, Department of Mathematics and Statistics, (AFIT/ENC); BS, Brigham Young University, 1987; MS (2), Air Force Institute of Technology, 1994; MA, Rice University, 2001; PhD, Rice University, 2002. Maj Abramson's research interests include optimization and numerical analysis, particularly as applied to engineering design problems. His recent research has focused primarily on generalized pattern search algorithms for solving nonlinear and mixed variable programming problems. Maj Abramson's previous military assignments have been in test and evaluation, logistics policy analysis, and computer simulation and analysis of war plans. Tel. 937-255-3636, x4524 (DSN: 785-3636, x4524), email = Mark.Abramson@afit.edu

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ANDERSON, BRADLEY E., Maj, Assistant Professor of Logistics Management, Department of Operational Sciences (AFIT/ENS); BS, Meteorology, University of Wisconsin - Madison, 1990; MS, Logistics Management, Air Force Institute of Technology, 1996; PhD, Business, Indiana University - Bloomington, 2002. Maj Anderson’s research interests include reparable inventory management, mixed integer programming, network models, supply chain management, and evolutionary algorithms. Tel. 937-255-6565, x4335 (DSN 785-6565, x4335), email = Brad.Anderson@afit.edu

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ROH, WON B., Professor of Engineering Physics, Department of Engineering Physics, (AFIT/ENP); BS, Seoul National University, 1964; MS, The Ohio State University, 1968; PhD, The Ohio State University, 1973. Professor Roh's research interests span technology areas covering lasers, optics, laser spectroscopy, and nonlinear optics. The applications of the technology areas include laser coupling, beam cleanup and combining, image processing, phase conjugation, chemical kinetics, and optical diagnostics. Professor Roh's research is currently funded by the Air Force Office of Scientific Research. He has advised 6 PhD and over 40 MS students during his 23 years on AFIT faculty and published about 50 papers. He is the recipient of the Gage H. Crocker Outstanding Professor Award. Tel. 937-255-3636, x4509 (DSN: 785-3636, x4509), email = Won.Roh@afit.edu
SHELLEY, MICHAEL L., Associate Professor of Engineering and Environmental Management, Department of Systems and Engineering Management (AFIT/ENV); BCE, Auburn University, 1974; MS, Virginia Tech, 1975; PhD, Environmental Science and Engineering, University of North Carolina, 1985. Dr. Shelley focuses on system dynamics modeling in analyzing long-term management strategies. His research interests include abiotic and biochemical contaminant fate and transport, physiologically-based pharmacokinetic modeling, and ecological engineering design to optimize mission activity with environmental constraints. Tel. 937-255-3636, x4594 (DSN: 785-3636, x4594), email = Michael.Shelley@afit.edu

SMITH, E. PRICE, Lt Col, Assistant Professor of Aerospace and Systems Engineering, Department of Aeronautics and Astronautics, (AFIT/ENY); BSEE, Virginia Polytechnic Institute and State University, 1982; MS, Systems Engineering, AFIT, 1987; PhD, Industrial and Systems Engineering, Virginia Polytechnic Institute and State University, 1994. Lt Col Smith's research interests include unmanned aerial vehicle (UAV) design, systems engineering education, and global non-convex optimization algorithms. Lt Col Smith has previously been assigned to HQ USCENTCOM as the Deputy Science Advisor, and to the HQ Air Force Operational Test and Evaluation Center and the Aeronautical Systems Center as a test engineer for electronic warfare, flight simulator, and communications systems.

SPENNY, CURTIS H., Associate Professor of Aerospace and Systems Engineering, Department of Aeronautics and Astronautics, (AFIT/ENY); BSME, University of Cincinnati, 1964; MS, Engineering, UCLA, 1966; PhD, Analytical Mechanics, Harvard University, 1973. Dr. Spenny's research interests include vehicle dynamics and control, robotics, man-in-the-loop control and systems engineering. Dr. Spenny has prior experience at Hughes Aircraft, NASA and the U.S. Department of Transportation, and is a registered professional engineer in the State of Ohio. Tel. 937-255-7777, x3296 (DSN: 785-7777, x3296), email = Curtis.Spenny@afit.edu

STOCKMAN, WILLIAM K., Lt Col, Assistant Professor of Acquisition Management, Department of Systems and Engineering Management (AFIT/ENV); BS, Mathematics, Southeast Missouri University, 1977; BS, Business Administration, Southeast Missouri University, 1977; BS, Astronautical Engineering, Air Force Institute of Technology, 1984; MS, Engineering Management, West Coast University, 1986; MS, Operations Research, Air Force Institute of Technology, 1988; MA, Economics, George Mason University, 1995; PhD, Economics, George Mason University, 1996. Lt Col Stockman’s research interests include source selection evaluation techniques, public-private competition, economic analysis, and general aviation.

SWARTZ, STEPHEN M., Lt Col, Assistant Professor of Logistics Management, Department of Operational Sciences, (AFIT/ENS); AAS, Community College of the Air Force, 1984; AS, Western Oklahoma State College, 1989; BPA, Embry-Riddle Aeronautical University, 1985; MA, Webster University, 1988; MS, Air Force Institute of Technology, 1991; PhD, Michigan State University, 1999. Lt Col Swartz’ research interests include aviation maintenance systems management, optimization of production systems, production management and scheduling, project management and scheduling, dynamic and static modeling, and theory of constraints education. Tel. 937-255-6565, x4285 (DSN 785-6565, x4285), email = Stephen.Swartz@afit.edu

TEMPLE, MICHAEL A., Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, (AFIT/ENG); BSE, Southern Illinois University, 1985; MSE, Southern Illinois University, 1986; PhD, Air Force Institute of Technology, 1993. Dr. Temple’s research interests include electromagnetic propagation phenomenology, Adaptive and Interferometric Clutter Erasure (ACE/ICE), High Range Resolution (HRR) radar, precision emitter location, digital and spread spectrum communications, and complex waveform generation and analysis. His sponsored research efforts in Command, Control, Communications and Intelligence (C3I), radar signal/signature processing, and Electronic Warfare (EW), as adopted by and/or transitioned to DoD and other national agencies, has provided nearly $1M in research and technology benefits. Tel. 937-255-3636, x4703 (DSN: 785-3636, x4703), email = Michael.Temple@afit.edu
TERZUOLI, ANDREW J. JR., Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, (AFIT/ENG); BS, Electrical Engineering, Polytechnic Institute of Brooklyn, 1969; MS, Electrical Engineering, Massachusetts Institute of Technology, 1970; PhD, Electrical Engineering, The Ohio State University, 1982. His research interests include computer model based studies; application of parallel computation, VLSI technology, and RISC architecture to numerical and transform methods; remote sensing, antennas and electromagnetics, machine vision and image processing; automated object recognition; and wave scattering, radar cross section and low observables (stealth) technology. Dr. Terzuoli has published numerous articles. His research is funded by various agencies including Wright, Rome, Phillips and Armstrong Laboratories. Prior to joining AFIT in 1982, Dr. Terzuoli was a research associate at the ElectroScience laboratory at the Ohio State University, and was a member of the technical staff at the Bell Telephone Laboratories in New Jersey. Tel. 937-255-3636, x4717 (DSN: 785-3636, x4717), email = Andrew.Terzuoli@afit.edu

THAL, ALFRED E. JR., Lt Col, Department Head and Assistant Professor of Engineering and Environmental Management, Department of Systems and Engineering Management (AFIT/ENV); BS, Civil Engineering, Texas Tech University, 1981; MS, Engineering Management, AFIT, 1985; PhD, Environmental Engineering, University of Oklahoma, 1999. Lt Col Thal’s research interests include Fair and Transport of Subsurface Contaminants, environmental policy and management issues, Engineering and Facility Management Issues, and contingency readiness and training. Tel. (937) 255-3636, x4591 (DSN: 785-3636, x4591), email = Alfred.Thal@afit.edu.

TORVIK, PETER J., Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, (AFIT/ENY); BS, University of Minnesota, 1960; MS, University of Minnesota, 1962; PhD, University of Minnesota, 1965; BA, Wright State University, 1980. Professor Torvik is a specialist in theory of elasticity, wave propagation, shock and vibration, impact damage in aircraft systems, laser-material interactions, and aircraft survivability/ vulnerability. His primary research interests include structural dynamics, specifically, damping, impact, and penetration mechanics. Dr. Torvik is the author of some 60 technical papers and reports and 20 other publications. He served as Head of the Department of Aeronautics and Astronautics, 1980-1990. He is the recipient of the AF Meritorious Civilian Service Award and the AF Exceptional Civilian Service Award. Dr. Torvik is a Fellow of AIAA and also a Fellow of the ASME. Tel. 937-255-3636, x4740 (DSN: 785-3636, x4740), email = Peter.Torvik@afit.edu.

TRAGESSER, STEVEN G., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, (AFIT/ENY); BSAE, University of Illinois, 1992; MSAE, Purdue University, 1994; PhD, Purdue University, 1997. Prior to joining the AFIT faculty, Dr. Tragesser worked in the Space Guidance and Navigation Section at Draper Laboratory. His research interests include guidance of hypersonic vehicles, trajectory design and optimization, dynamics of tethered spacecraft, and satellite formation flying. Dr. Tragesser has published several refereed journal and conference papers and is a member of AIAA. Tel. 937-255-6565, x4286 (DSN: 785-6565, x4286), email = Steven.Tragesser@afit.edu.

TUTTLE, RONALD F., Associate Professor of Nuclear Engineering and Chair, Measurement and Signature Intelligence (MASINT) Technologies, Department of Engineering Physics, (AFIT/ENP); BS, Chemical Engineering, University of Missouri (Columbia), 1968; MS, Nuclear Engineering, University of Missouri (Columbia), 1970; PhD, Nuclear Engineering, University of Missouri (Columbia), 1980. Dr. Tuttle’s research areas are applications of active and passive remote sensing, spectroscopy, diagnostics, and signals processing to problems in intelligence collection and exploitation. Other areas of interest are nuclear weapon effects and space nuclear power systems modeling and mechanics of aerosols. He has published in both unclassified and classified refereed archival journals and conference proceedings. Tel. 937-255-3636, x 4536 (DSN 785-3636, x4536), email = Ronald.Tuttle@afit.edu.

WALTERS, MICHAEL K., Lt Col, Assistant Professor of Atmospheric Physics, Department of Engineering Physics (AFIT/ENP); BS, Zoology, Texas A&M University, 1976; MS, Meteorology, Texas A&M University, 1985; PhD, Meteorology, Texas A&M University, 1988. Lt Col Walters has chaired 17 MS theses in four years at AFIT in the areas of battlefield-scale cloud forecasting, contrail forecasting, forecast support for electro-optical precision guided munitions, thunderstorm and downburst wind forecasting for space-launch support, ensemble-based probability of precipitation forecasting, transport and diffusion modeling, and mesoscale numerical weather prediction. He is a member of the American Meteorological Society and the American Geophysical Union. Tel. 937-255-3636, x4681 (DSN: 785-3636, x4681), email = Michael.Walters@afit.edu.
WARD, MARK A., Maj, Assistant Professor of Information Resource Management, Department of Systems and Engineering Management, (AFIT/ENV); BS, Texas A&M University; MS, Air Force Institute of Technology, 1992; PhD, Business Administration, Southern Illinois University at Carbondale, 1999. Maj Ward previously worked at Headquarters Air Mobility Command in the C-17 acquisition program. His research interests center around information systems productivity and numerous organizational studies issues. He is a member of MENSA and Beta Gamma Sigma. Tel. 937-255-3636, x4742 (DSN: 785-3636, x4742), email = Mark.Ward@afit.edu.

WEBB, TIMOTHY S., Maj, Instructor of Statistics, Department of Mathematics and Statistics, (AFIT/ENC); BS, United States Air Force Academy, 1988; MS, Air Force Institute of Technology, 1994; PhD candidate, University of Colorado Health Sciences Center. Maj Webb’s research interests include biostatistics, categorical data analysis, and design of experiments. Tel. 937-255-3636, x4678 (DSN: 785-3636, x4678), email = Timothy.Webb@afit.edu.

WEEKS, DAVID E., Associate Professor of Physics, Department of Engineering Physics (AFIT/ENP); BA Physics with honors, Colgate University, 1983; MS, Physics, Georgia Institute of Technology, 1985; PhD, Physics, University of Arkansas, 1989. Dr. Weeks’ research interests include development of time dependent wave packet methods to model quantum mechanics of simple chemical reactions and to compute associated state to state reactive scattering matrix elements. A second area of interest centers on the application of k-p theory together with the envelope function approximation to model the electronic and optical properties of quantum well heterostructures. Tel. 937-255-3636, x4561 (DSN: 785-3636, x4561), email = David.Weeks@afit.edu.

WEIR, JEFFERY D., Maj, Assistant Professor of Operations Research, Department of Operational Sciences (AFIT/ENS); Bachelors of Electrical Engineering, Georgia Institute of Technology, 1988; MAS, Embry Riddle Aeronautical University, 1992; MS, Air Force Institute of Technology, 1995; PhD, Georgia Institute of Technology, 2002. Maj Weir’s research interests include large-scale optimization, mathematical programming and decision analysis. He is a member of the Institute for Operations Research and Management Science (INFORMS) and the Military Operations Research Society (MORS). Tel. 937-255-6565, x4333 (DSN 785-6565, x4333), email = Jeffery.Weir@afit.edu.

WHITE III, EDWARD D., Maj, Assistant Professor of Statistics, Department of Mathematics and Statistics, (AFIT/ENC); BS, University of Tampa, 1990; MAS, Ohio State University, 1991; PhD, Texas A&M University, 1998. Capt White’s research interests include design of experiments, categorical data analysis, biostatistics, and model building.

WIESEL, WILLIAM E., JR., Professor of Astronautical Engineering, Department of Aeronautics and Astronautics, (AFIT/ENY); BS, University of Massachusetts, 1970; MS, Harvard University, 1972; PhD, Harvard University, 1974. Dr. Wiesel's research interests include orbital mechanics and astrodynamics, chaotic systems, estimation and control, planetary astronomy, stability theory, and optimal control. Dr. Wiesel is the author of Spaceflight Dynamics, the leading introductory text on astronautical engineering. He has authored over 30 technical papers and has been a member of the department for 25 years. Tel. 937-255-6565, x4312 (DSN: 785-6565, x4312), email = William.Wiesel@afit.edu.

WILEY, VICTOR D., Maj, Assistant Professor of Operations Research, Department of Operational Sciences (AFIT/ENS); BS, Texas A&M University, 1991; MS, Air Force Institute of Technology, 1996; PhD, The University of Texas at Austin, 2001. Maj Wiley’s research interests include heuristics, metaheuristics, applications of group theory to metaheuristic search neighborhoods, and program management. Tel. 937-255-6565, x4367 (DSN 785-6565, x4367), email = Victor.Wiley@afit.edu.

WOLF PAUL J., Associate Professor of Physics, Department of Engineering Physics, (AFIT/ENP); and Assistant Dean, Graduate School of Engineering and Management, (AFIT/EN); BS, Regis College, 1978; MS, Air Force Institute of Technology, 1979; PhD, Air Force Institute of Technology, 1985. Dr. Wolf’s research interests are concentrated in experimental atomic/molecular spectroscopy, reactive and non-reactive collision kinetics, thin film deposition processes by laser with applications toward laser devices, ionospheric and atmospheric chemistry, environmental monitoring, and thin film devices. He has published over 20 papers and advised two PhD and five MS students. Tel. 937-255-3636, x4560 (DSN: 785-3636, x4560), email = Paul.Wolf@afit.edu.
WOOD, AIHUA W., Professor of Mathematics, Department of Mathematics and Statistics (AFIT/ENC); BS, Beijing University, 1984; MS, University of Connecticut, 1988; PhD, University of Connecticut, 1990. Dr. Wood's research interests include elliptic partial differential equations, electromagnetic wave propagation, finite element methods, and photonic crystals. Dr. Wood is currently funded by the Air Force Office of Scientific Research to investigate scattering and propagation of electromagnetic waves, and is the Principal Investigator for a AFRL/DAGSI Research Project to develop a hybrid Maxwell solver for wide-band radar signature prediction for low observable targets. Tel. 937-255-3636, x4521 (DSN: 785-3636, x4521), email = Aihua.Wood@afit.edu

WOOD, WILLIAM D., Maj. Assistant Professor of Electrical Engineering, Department of Electrical and Computer Engineering (AFIT/ENG); BSEE, University of Arizona, 1985; MSEE, Air Force Institute of Technology, 1990; PhD, Air Force Institute of Technology, 1997. Maj Wood’s research interests include low observables and electromagnetic scattering and radiation. His areas of expertise include computational electromagnetics, wave interaction, and radar measurement technology. He is a Member of the IEEE, author or co-author of 12 refereed archival journal and conference papers. Tel. 937-255-3636, x4639 (DSN: 785-3636, x4639), email = William.Wood@afit.edu.

YEO, YUNG K., Professor of Physics, Department of Engineering Physics, (AFIT/ENP); BS, Seoul National University, 1961; PhD, University of Southern California, 1972. Professor Yeo's research interests include solid-state physics, especially characterization of the electrical and optical properties of elemental, compound, ternary, and quaternary semiconductors using techniques such as Hall effect measurement, deep level transient spectroscopy, cathodoluminescence, and photoluminescence. Professor Yeo has published about 80 articles in archival journals, several technical reports, presented about 160 papers at professional conferences, and holds one patent. He is a reviewer for the Applied Physics Letters and the Journal of Applied Physics. He is currently funded by the AFOSR to study wide band gap semiconductors such as SiC and GaN. This work involves collaborative effort with the Air Force Wright Laboratory. He has directed the research of eleven PhD students and sixteen MS students. He received the Ezra Kotcher Award for 1990, received the Gage H. Crocker Outstanding Professor Award for 1992, and received General Bernard A. Schriever Award for 1997. Tel. 937-255-3636, x4532 (DSN 785-3636, x4532), email= Yung.Yeo@afit.edu .
# APPENDIX B  DEPARTMENT SYMBOLS AND LOCATIONS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>School Office/Department</th>
<th>Room</th>
<th>Telephone, (DSN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>Office of the Dean&lt;br&gt;Dr. Robert A. Calico, Jr., Dean&lt;br&gt;Col Rita A. Jordan, Associate Dean&lt;br&gt;Dr. Paul J. Wolf, Assistant Dean for Academic Affairs</td>
<td>100</td>
<td>(937) 255-3025 (DSN: 785-3025)&lt;br&gt;(937) 255-3025 (DSN: 785-3025)&lt;br&gt;(937) 255-4372 (DSN: 785-4372)&lt;br&gt;(937) 255-3636, x4560 (DSN: 785-3636, x4560)</td>
</tr>
<tr>
<td>ENR</td>
<td>Office of Research and Consulting&lt;br&gt;Dr. Heidi R. Ries, Associate Dean for Research</td>
<td>103</td>
<td>(937) 255-3633 (DSN: 785-3633)</td>
</tr>
<tr>
<td>ENC</td>
<td>Department of Mathematics and Statistics&lt;br&gt;Dr. Alan V. Lair</td>
<td>114</td>
<td>(937) 255-3098 (DSN: 785-3098)</td>
</tr>
<tr>
<td>ENG</td>
<td>Department of Electrical and Computer Engineering&lt;br&gt;Col Donald R. Kitchen</td>
<td>218</td>
<td>(937) 255-2024 (DSN: 785-2024)</td>
</tr>
<tr>
<td>ENP</td>
<td>Department of Engineering Physics&lt;br&gt;Dr. Robert L. Hengehold</td>
<td>106</td>
<td>(937) 255-2012 (DSN: 785-2012)</td>
</tr>
<tr>
<td>ENS</td>
<td>Department of Operational Sciences&lt;br&gt;Col David R. LaRivee</td>
<td>177</td>
<td>(937) 255-2549 (DSN: 785-2549)&lt;br&gt;(937) 656-4943 (DSN: 986-4943)</td>
</tr>
<tr>
<td>ENV</td>
<td>Department of Systems and Engineering Management&lt;br&gt;Lt Col Alfred E. Thal, Jr.</td>
<td>204</td>
<td>(937) 255-2998 (DSN: 785-2998)</td>
</tr>
<tr>
<td>ENY</td>
<td>Department of Aeronautics and Astronautics&lt;br&gt;Dr. Bradley S. Liebst</td>
<td>201</td>
<td>(937) 255-3069 (DSN: 785-3069)</td>
</tr>
</tbody>
</table>
## APPENDIX C ABBREVIATIONS FOR ORGANIZATIONS

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing includes only selected organizations. The Defense Technical Information Center has an acronym listing at [http://www.dtic.mil/dtic/dtic-acronyms.html](http://www.dtic.mil/dtic/dtic-acronyms.html). The department symbols for the Graduate School of Engineering and Management are found in Appendix B.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC</td>
<td>Air Combat Command</td>
</tr>
<tr>
<td>AETC</td>
<td>Air Education and Training Command</td>
</tr>
<tr>
<td>AFCEE</td>
<td>Air Force Center for Environmental Excellence</td>
</tr>
<tr>
<td>AFCESA</td>
<td>Air Force Civil Engineer Support Agency</td>
</tr>
<tr>
<td>AFIT</td>
<td>Air Force Institute of Technology</td>
</tr>
<tr>
<td>AFMC</td>
<td>Air Force Materiel Command</td>
</tr>
<tr>
<td>AFOSR</td>
<td>Air Force Office of Scientific Research</td>
</tr>
<tr>
<td>AFOTEC</td>
<td>Air Force Operational Test and Evaluation Center</td>
</tr>
<tr>
<td>AFRL</td>
<td>Air Force Research Laboratory</td>
</tr>
<tr>
<td>AFSPC</td>
<td>Air Force Space Command</td>
</tr>
<tr>
<td>AFTAC</td>
<td>Air Force Technical Applications Center</td>
</tr>
<tr>
<td>AIA</td>
<td>Air Intelligence Agency</td>
</tr>
<tr>
<td>AMC</td>
<td>Air Mobility Command</td>
</tr>
<tr>
<td>ASC</td>
<td>Aeronautical Systems Center</td>
</tr>
<tr>
<td>AU</td>
<td>Air University</td>
</tr>
<tr>
<td>CRADA</td>
<td>Cooperative Research and Development Agreement</td>
</tr>
<tr>
<td>DAGSI</td>
<td>Dayton Area Graduate Studies Institute</td>
</tr>
<tr>
<td>DE</td>
<td>Directed Energy Directorate</td>
</tr>
<tr>
<td>DISA</td>
<td>Defense Information Systems Agency</td>
</tr>
<tr>
<td>DoD</td>
<td>Department of Defense</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Energy</td>
</tr>
<tr>
<td>HE</td>
<td>Human Effectiveness Directorate</td>
</tr>
<tr>
<td>HQ AU</td>
<td>Headquarters, Air University</td>
</tr>
<tr>
<td>IF</td>
<td>Information Directorate</td>
</tr>
<tr>
<td>ML</td>
<td>Materials and Manufacturing Directorate</td>
</tr>
<tr>
<td>MN</td>
<td>Munitions Directorate</td>
</tr>
<tr>
<td>PACAF</td>
<td>Pacific Air Forces</td>
</tr>
<tr>
<td>PR</td>
<td>Propulsion Directorate</td>
</tr>
<tr>
<td>SAF</td>
<td>Secretary of the Air Force</td>
</tr>
<tr>
<td>SN</td>
<td>Sensors Directorate</td>
</tr>
<tr>
<td>USAF</td>
<td>United States Air Force</td>
</tr>
<tr>
<td>VA</td>
<td>Air Vehicles Directorate</td>
</tr>
<tr>
<td>VS</td>
<td>Space Vehicles Directorate</td>
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</tbody>
</table>
APPENDIX D  AFIT HISTORY

The Institute

AFIT traces its roots to the early days of powered flight when it was apparent that the progress of military aviation depended upon special education in this new science. In 1919, the Air School of Application was established at McCook Field in Dayton, Ohio, the home of Orville and Wilbur Wright.

When Congress authorized creation of the Air Corps in 1926, the school was renamed the Air Corps Engineering School and moved to Wright Field in 1927. Shortly after Pearl Harbor, the school suspended classes, but it reopened as the Army Air Forces Engineering School in 1944 to conduct a series of accelerated courses to meet emergency requirements.

In 1946, the Army Air Force Institute of Technology was established as part of the Air Materiel Command. The Institute was composed of two colleges: Engineering and Maintenance, and Logistics and Procurement. These colleges were later redesignated the College of Engineering Sciences and the College of Industrial Administration.

When the Air Force became a separate service in 1947, the Institute was renamed the Air Force Institute of Technology. That same year, the School of Civil Engineering Special Staff Officer's Course began. In 1948, civilian institution programs were transferred to AFIT.

In 1950, command jurisdiction of AFIT shifted from Air Materiel Command to Air University (AU) with headquarters at Maxwell AFB, Alabama. The Institute, however, remained at what was now known as Wright-Patterson AFB. In 1951, the two AFIT colleges were combined into the Resident College.

The Institute established a logistics education program at WPAFB in 1955, and The Ohio State University conducted the first courses on a contract basis. In 1958, AFIT began a series of short courses in logistics as part of the Air Force Logistics Command (AFLC) Education Center. Later that year, the School of Logistics became a permanent part of AFIT.

In 1954, the 83rd Congress authorized the Commander of Air University to confer degrees upon persons in the AFIT Resident College. The college was divided later into the School of Engineering, the School of Logistics, the Installations Engineering School, and the School of Business. The first undergraduate engineering degrees were granted in 1956, and the first graduate degrees in business in 1958. The School of Business programs were transferred to civilian universities in 1960. In 1963, the School of Logistics was redesignated the School of Systems and Logistics. Also, the Civil Engineering Center was redesignated as the Civil Engineering School.

In 1957, AFIT became a member of the Dayton Miami Valley Consortium (DMVC), which later changed its name to Southwestern Ohio Council for Higher Education (SOCHE). The council is an association of colleges, universities, and industrial organizations in the Dayton area united to promote educational advancement. AFIT traditionally has been active in both the council and in other community and inter-institutional programs.

In 1995, AFIT’s Graduate School of Engineering became a member of the Dayton Area Graduate Studies Institute (DAGSI) along with the graduate engineering schools of Wright State University and the University of Dayton. The purpose of the partnership was to provide, through the combined engineering and research resources of the three schools, educational and research opportunities at the MS and PhD level. The University of Cincinnati and the Ohio State University became affiliate members of DAGSI in 1997. DAGSI provides a continuing source of advanced technological expertise for the region covered by the five schools. The DAGSI program covers a broad spectrum of over 30 major research areas and benefits from the support of business and industry, government and civic sectors of the Dayton Region.

Early in Fiscal Year 97, the Secretary of the Air Force made a decision to close the AFIT resident graduate schools. In anticipation of closure, AFIT developed and began a transition and closure plan. However, in April 1998, after a visit to AFIT, the Acting Secretary of the Air Force, F. Whitten Peters announced a reversal of the Air Force decision to terminate the AFIT resident graduate programs. AFIT has continued a restructuring initiative begun in FY96 that sized the resident graduate programs to meet the Air Force education requirements of the FY03 force structure. As part of this restructuring, the two resident graduate schools were merged into the Graduate School of Engineering and Management on Oct 1, 1999.
Research

Creative, relevant research programs are essential to both graduate education and the continuous modernization of military capability. Consequently, research has been an important element of the educational enterprise throughout AFIT’s history, often in collaboration with scientists of the Air Force Research Laboratories co-located at Wright-Patterson Air Force Base. The implementation of the PhD program at AFIT in 1965 resulted in significant growth of the research activities on the AFIT campus. The expanded role of sponsored research at AFIT was recognized by the creation of the Office of Research for the School of Engineering in 1989 and the Office of Research and Consulting for the School of Logistics and Acquisition Management in 1990 (now the Office of Research and Consulting in the Graduate School of Engineering and Management).

Several key projects are illustrative of AFIT’s research impact on the Air Force, the Department of Defense, and the nation. For more than twenty years, the Department of Engineering Physics has conducted strong research in high-energy laser technology and delivered mission ready graduates to AF laboratories. Two PhD graduates served as directors of the Air Force laser program, and four PhD graduates led the team demonstrating a 40 kW laser for anti-satellite missions. The AFIT laser weapons research group is now supporting the development of the Airborne Laser, based on the Chemical Oxygen Iodine Laser co-invented by an AFIT graduate. Other work of the laser weapons research group includes the development of lasers for remote sensing and counter-proliferation applications, new optical diagnostic methods, and studies of ionization mechanisms in the thermosphere for satellite survivability.

In support of the Air Force's and DoD's environmental restoration programs, AFIT established a remediation research program in the early 1990’s involving faculty from four departments. Since that time, over 50 student theses on the subject have been published and graduates have gone on to manage remediation programs at bases and major commands throughout the Air Force. Research contributions include a field demonstration of a bioremediation technology that destroys trichloroethylene, the most common groundwater contaminant at DoD installations, and some of the first studies of the biodegradability of tolyltriazole, an aircraft deicing fluid additive recognized as an important groundwater contaminant at airfields throughout the nation.

AFIT researchers in the Department of Operational Science, responding to the needs of the C-17 Systems Program Office (SPO), developed an object-oriented simulation model to quantify the rate of paratrooper/vortex interaction for various airdrop formations, enhanced through high-resolution computer visualization of model results. The research results were briefed to the C-17 SPO Director, the Director of Test and Evaluation for the Office of the Secretary of Defense, the Undersecretary of the Army for Operations Research, and the Commander of the XVIII Airborne Corps. Utilizing their C-17 airdrop simulation model, the AFIT researchers also led a preflight study of the multinational CENTRAZBAT ’97 Exercise; the XVIII Airborne Corps Commander praised their analysis as "dead-on!"

The Department of Aeronautics and Astronautics has an ongoing research program studying high cycle fatigue, the cause of the most dominant issue relevant to gas turbine engine damage. Currently, there exists only a cursory understanding of damage, crack initiation, and crack propagation under high cycle fatigue conditions. It has been recognized that a significant number of failures of engine components are attributable to fretting damage, such as dovetail blades, including press-fit or interlocking connections which are subjected to surface wear and fretting fatigue. The study, in collaboration with the Materials and Manufacturing Directorate of the Air Force Research Laboratory, uses an integrated experimental/analytical numerical modeling approach to investigate the high cycle fretting fatigue behavior of titanium alloys.

In December 1998, AFIT broke ground for an $8.9 million engineering laboratory. The lab officially opened in March 2001 and enables AFIT to continue its tradition of high quality experimental research in aeronautical engineering, electrical engineering, applied physics and environmental science in support of the Air Force Mission. In 2002, AFIT established three research centers: the Center for Information Systems Security Education and Research; the Center for Measurement and Signature Intelligence Studies and Research; and the Center for Directed Energy.
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General inquiries concerning faculty and student research at the Air Force Institute of Technology may be addressed to:

Office of Research and Consulting  
Air Force Institute of Technology  
2950 P Street, Bldg 640, Room 103  
Wright Patterson AFB, OH 45433-7765  
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Website:  http://www.afit.edu  
Email:  afit.enrsta@afit.edu
# Air Force Institute of Technology Research Report 2002

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## Supplementary Notes

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## Abstract

This report summarizes the research activities of the Air Force Institute of Technology’s Graduate School of Engineering and Management. It describes research interests and faculty expertise; lists student theses/dissertations; identifies research sponsors and contributions; and outlines the procedures for contacting the school. Included in the report are: faculty publications, conference presentations, consultations, and funded research projects. Research was conducted in the areas of Aeronautical and Astronautical Engineering, Electrical Engineering and Electro-Optics, Computer Engineering and Computer Science, Systems and Engineering Management, Operational Sciences, Engineering Physics and Logistics and Acquisition Management.

## Subject Terms

Air Force Institute of Technology, Research Report 2002

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