MASSACHUSETTS INSTITUTE OF TECHNOLOGY

LINCOLN LABORATORY

244 WOOD STREET
LEXINGTON, MASSACHUSETTS 02420-9108

25 July 2003

Area Code 781
981-1026

Dr. Lenore Mullin
University of Albany
Department of Computer Science
Albany, NY 12222

Dear Dr. Mullin,

For convenience in preparing your presentation for the HPEC 2003 Workshop, please find enclosed a speaker's package which includes the following:

- Abstract and Presentation/Poster Disclosure Authorization Forms and Instructions
- A Copyright Release Form
- A list of presentation guidelines to publish your abstract in the abstract booklet and your presentation in the proceedings
- Preliminary Agenda

Please adhere to the enclosed guidelines and deadlines. Presentations received after these deadlines cannot be included in these permanent archives. We will also send you information regarding registration for the Workshop. Please see the HPEC web site http://www.ll.mit.edu/HPEC for additional details.

The quality and quantity of this year's submissions were outstanding, which made selection extremely difficult. We expect HPEC 2003 to be an outstanding Workshop and we look forward to your participation.

Sincerely,
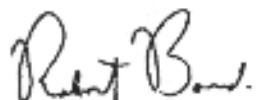
Robert A. Bond
HPEC General Chair

Jeremy Kepner
HPEC Technical Chair

Seventh Annual

High Performance Embedded Computing Workshop

22–25 September 2003

(22 September - U.S. Only Session)

Presenter's Package
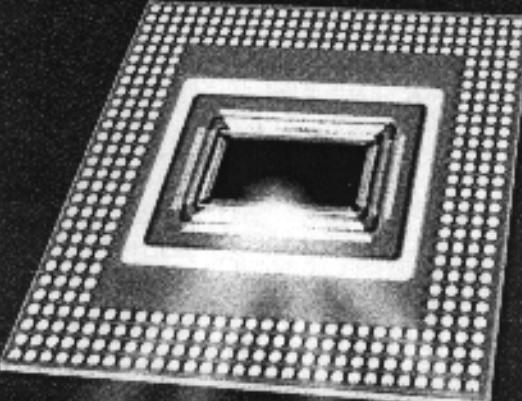
HPEC 2003
High Performance Embedded Computing

http://www.ll.mit.edu/hpec

LINCOLN LABORATORY
Massachusetts Institute of Technology

402391_M_1.al

Presentation Guidelines

The workshop sponsors and participants appreciate clear and legible presentations. In addition, the presentations themselves will constitute the published proceedings. Therefore, presenters are required to submit charts of the highest quality. Toward the goal of consistent quality and legibility, we ask that presenters adhere to the following guidelines when preparing their viewgraphs and posters.

VIEWGRAPHS AND POSTERS

Typeface

- Set regular text using a bold 18-point font. A bold sans serif font such as Helvetica is preferred for its readability in a large auditorium.
- Other sized fonts may be used as necessary, such as bold 24-point for titles, bold 16-point for sub-points, etc. However, do not use a font size smaller than 14-point, and always use bold fonts.

Format

- Visually center all viewgraphs within a 9" by 7" area, with at least a 1/4-inch margin inside the frame.
- Orient the viewgraphs horizontally (landscape).
- Limit your viewgraphs to 10 lines of text. Wider comprehension is aided by succinct visuals.

Posters

- Total poster area: 4' tall by 6' wide. This space will be arranged as two 4' x 3' felt-covered boards placed side by side.
- Total available area: 3' 6" tall by 6' wide. The title banner will consume the top six inches of the poster area. Lincoln Laboratory will be providing a title banner with the poster title, name(s) of the author(s), and the author affiliation(s).
- Recommended poster panel size: 11" tall by 15" wide. Authors should enlarge 8.5" x 11" panels by 30% to arrive at the final 11" x 15" panels. The poster panels must be oriented horizontally (landscape).
- A single 4' x 3' board fits 8 - 8 ½" x 11" poster panels or 6 - 11" x 15" poster panels.
- Poster panels must be mounted on a firm background such as foam core.
- Lincoln Laboratory will provide pins or Velcro to facilitate mounting the poster panels on the felt-covered poster boards.

GRAPHICAL MATERIAL

Graphs and Tables

- Use 2-point rules for curves. Do not use line widths smaller than 1-point anywhere on graphs or tables.
- The same rules for fonts above apply to text within all graphs and tables. It is recommended that axis labels and table headings be set with at least a 16-point font.

Images

- Ensure that all images such as photographs, artwork, etc., can be photocopied legibly. High contrast images are more easily reproduced.
- Ensure that all text appearing in the image is large and legible.

PRESENTATION FORMAT

- A professional projectionist will display viewgraphs on a large screen behind the speaker. Speakers are provided with a podium, microphone, laser pointer, and a queuing button for the projectionist.
- To assist the projectionist, electronic presentations should be in Microsoft Power Point. If you will be using hard-copy format, all viewgraphs should be placed within frames and clearly numbered.
- For non-viewgraph visuals, please contact Ms. Francine James at (781) 981-4842 to make arrangements. Electrical outlets and a 5' x 3' table can be provided for demonstrations. If you are planning a demonstration, please contact Ms. Francine James by 22 August 2003 so we can prepare the facility.

SAMPLE SLIDE (next page)

TITLE IS SET IN SIZE 24 POINT

- ## THE FIRST LEVEL OF TYPE IS SET IN 18 POINT

  - ### THE SECOND LEVEL OF TYPE IS SET IN 16 POINT

    THE THIRD LEVEL OF TYPE IS SET IN 14 POINT

- ## GRAPHICS EXAMPLES

Table

16 pt		
14 pt		

DESCRIPTIVE LABEL (14 pt)

X-AXIS (16 pt)

Y-AXIS (16 pt)
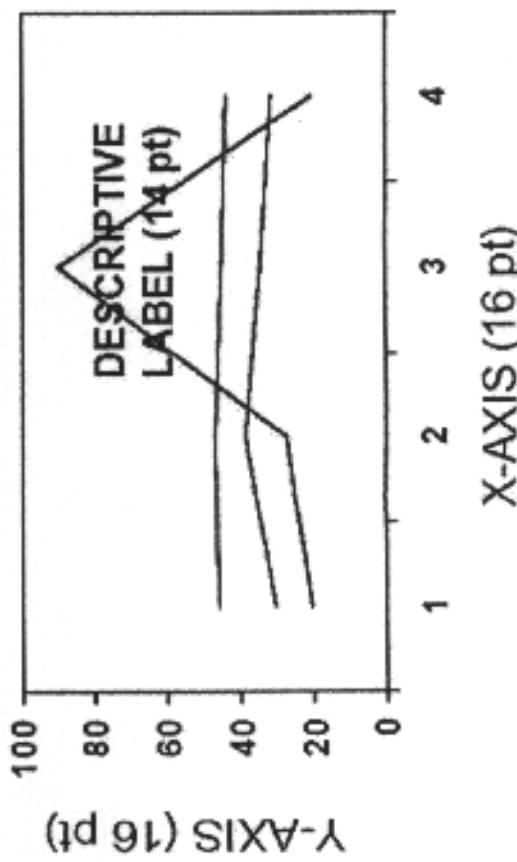
ABSTRACT DISCLOSURE AUTHORIZATION FORM

FOR PUBLIC DOMAIN SESSIONS

Seventh Annual Workshop on High Performance Embedded Computing (HPEC 2003)
MIT Lincoln Laboratory
Attn: Francine James
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Phone: (781) 981-4842
Fax: (781) 981-2517

Do not use this form for closed / limited sessions.

This completed form must be received by 29 August 2003 for inclusion in the abstract booklet, the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the abstract must be omitted.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: _____

Author(s): _____

Name of organization: _____

Address: _____

_____

Telephone: _____

Classification: **UNCLASSIFIED**

Based on IR&D? ___ Yes ___ No

Presentation cleared for public release by: _____ Case # _____

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

Disclosure authorization is not required for this presentation because (check one only):
___ no government funds are involved, or
___ presentation is under fundamental research under 6.1 funding

I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.
___ Unclassified presentation by DoD personnel.
___ Unclassified contractor presentation of material not related to work under DoD contract.

Sponsoring Agency   Certifying Official †

_____   _____ (typed)

_____   _____ (signed)

Telephone _____ Date _____ Title _____

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS

see instructions on reverse side

ABSTRACT DISCLOSURE AUTHORIZATION FORM

Instructions for the Disclosure Authorization Form

The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2003 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of materials. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:
Part I: Basic information about the presentation to be completed by all presenters
Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for the written abstract. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 29 August 2003. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the abstract is prepared. No abstracts will be permitted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author's agency or the appropriate user agency.

Instructions for Part I

If the research being presented is based on IR&D (internal research and development) or academic funding, mark "yes" here and skip the rest of Part I. Otherwise, please provide the name of the office or agency providing the clearance for public release and the case number associated with the abstract and presentation.

Instructions for Part II

If the research being presented is based on academic funding, or is based on fundamental research under 6.1 funding, please check the appropriate line and skip the remainder of Part II.

If the research being presented involves government funds and is not fundamental research under 6.1 funding, select either "Unclassified presentation by DoD personnel" or "Unclassified contractor presentation of material not related to work under DoD contract", and complete the remainder of Part II.

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This completed form must be received by 29 August 2003 for presentation at the Workshop and for inclusion in the proceedings document and on the MIT Lincoln Laboratory World Wide Web. Unless this form is received prior to presentation, the presentation must be cancelled.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: _____

Author(s): _____

Name of organization: _____

Address: _____

_____

Telephone: _____

Classification: **UNCLASSIFIED**

Based on IR&D? ____ Yes ____ No

Presentation cleared for public release by: _____ Case # _____

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

Disclosure authorization is not required for this presentation because (check one only):

____ no government funds are involved, or

____ presentation is under fundamental research under 6.1 funding

I hereby authorize oral disclosure of this presentation at the above Workshop and publication of the information in the Workshop proceedings.

____ Unclassified presentation by DoD personnel.

____ Unclassified contractor presentation of material not related to work under DoD contract.

Sponsoring Agency   Certifying Official †

_____   _____ (typed)

_____   _____ (signed)

Telephone _____ Date _____ Title _____

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† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR PUBLIC DOMAIN SESSIONS

see instructions on reverse side

pfl-2956a

PRESENTATION / POSTER DISCLOSURE AUTHORIZATION FORM

Instructions for the Disclosure Authorization Form

The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2003 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of materials. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:

    Part I: Basic information about the presentation to be completed by all presenters
    Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for the presentation and the proceedings document. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 29 August 2003. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the presentation is prepared. No presentations will be permitted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author's agency or the appropriate user agency.

Instructions for Part I

If the research being presented is based on IR&D (internal research and development) or academic funding, mark "yes" here and skip the rest of Part I. Otherwise, please provide the name of the office or agency providing the clearance for public release and the case number associated with the abstract and presentation.

Instructions for Part II

If the research being presented is based on academic funding, or is based on fundamental research under 6.1 funding, please check the appropriate line and skip the remainder of Part II.

If the research being presented involves government funds and is not fundamental research under 6.1 funding, select either "Unclassified presentation by DoD personnel" or "Unclassified contractor presentation of material not related to work under DoD contract", and complete the remainder of Part II.

FOR CLOSED / LIMITED

Seventh Annual High Performance Embedded Computing Workshop (HPEC 2003)
MIT Lincoln Laboratory
Attn: Francine James
244 Wood Street
Lexington, MA 02420-9108
Phone: (781) 981-4842
Fax: (781) 981-2517

Do not use this form for public domain materials.

This completed form must be received by 29 August 2003 for oral presentation at the Workshop. Unless this form is received prior to presentation, the presentation will be cancelled.

PART I: TO BE COMPLETED BY AUTHOR

Title of presentation: _____

Author(s): _____

Name of organization: _____

Address: _____

_____

Telephone: _____

Classification: _____

Based on IR&D? ___ Yes ___ No

PART II: TO BE COMPLETED BY A CERTIFYING OFFICIAL*

(For classified presentations and unclassified/limited presentations relating to work done under classified contracts.)

I hereby authorize oral disclosure of this presentation at the above Workshop.

Overall classification of the presentation is: _____
Classified papers should be marked:

Classified by: _____
Declassify on: _____

Sponsoring AgencyCertifying Official †

_____ _____ (typed)

_____ _____ (signed)

Telephone _____ Date _____ Title _____

* For U.S. Government employee presentations - Agency Security Manager or Department Head
† For contractor employee Presentations - User Agency Contract Monitor, Security Manager, or other Cognizant U.S. Government Official

FOR CLOSED / LIMITED SESSIONS

see instructions on reverse side

Instructions for the Disclosure Authorization Form

The Security Office of MIT Lincoln Laboratory has been assigned responsibility for disclosure authorization procedures for the HPEC 2003 Workshop. Both DoD and Industrial Security Regulations require written authorization for oral presentations or publication of all classified material. Disclosure authorization is required for unclassified contractor papers relating to work done under DoD contracts.

The Disclosure Authorization form consists of two parts:

Part I: Basic information about the presentation to be completed by all presenters

Part II: Disclosure authorization disclaimer

This Disclosure Authorization Form will be used for both the oral presentatin and the limited distribution proceedings. The completed Disclosure Authorization Form must be received by MIT Lincoln Laboratory by 29 August 2003. Please note that it can take six weeks or more to receive disclosure authorization from your sponsor after the presentation is prepared. No presentations will be permitted without proper authorization.

It is emphasized that disclosure authorization must be provided for all papers relating to work done under DoD contracts. The certifying official must in all cases be a U.S. Government employee representing the author's agency or the appropriate user agency.

Instructions for Part I

If the research being presented is based on IR&D (internal research and development) or academic funding, mark "yes" here.

Instructions for Part II

Authors presenting a classified paper or authors who are contractors presenting unclassified papers relating to work done under DoD must have Part II completed by a certifying official. The author is responsible to send or deliver the form to the appropriate certifying authority along with a copy of their written summary or presentation materials. The form should be completed by the certifying official and forwarded to the Lincoln Laboratory address at the top of the form by the date listed. Please note that it can take six weeks or more to receive disclosure authorization after the presentation is prepared.

Copyright Release
High Performance Embedded Computing 2003
Workshop

22-25 September 2003
(22 September – U.S. Only Session)

Lincoln Laboratory
Massachusetts Institute of Technology

Send completed form to:
Ms. Francine James
MIT Lincoln Laboratory
244 Wood Street / Room C-385
Lexington, MA 02420-9108
Tel: 781-981-4842 | Fax: 781-981-2517

Whereas MIT Lincoln Laboratory is the publisher of the Abstract Booklet and the Proceedings of the High Performance Embedded Computing 2003 (HPEC) Workshop, and the undersigned is the Author of an abstract and presentation/poster at that Workshop entitled:

_____

The Author hereby grants permission to MIT Lincoln Laboratory to publish that abstract in the Abstract Booklet and the presentation/poster in the Proceedings. Said Abstract Booklet and Proceedings will be printed for limited distribution controlled by MIT Lincoln Laboratory. The Author hereby represents that the above granted permission is not in conflict with or a violation of any previously issued permissions or copyrights to that material. If previous copyrights have been granted, the Author attaches hereto permission of the copyright holder for this publication and the necessary information for credit lines.

The Author retains all rights to said material in accordance with U.S. Code Title 17, Copy rights, revised to 1 January 1978.

The Author shall receive no payment from MIT Lincoln Laboratory for use of this material.

If Author is an employee of the U.S. Government (including the military), please check one:

_____ This material was prepared as part of my official duties for the U.S. Government.

_____ This material was prepared on my own volition, outside my official duties for the U.S. Government.

Approved and Accepted: AUTHOR: _____
                                                              (signature)

                                                              _____
                                                              (typed or printed name)

                              DATE: _____

High Performance Embedded Computing Workshop 2003

22-25 September 2003
(*22 September, U.S. Only Session*)

Lincoln Laboratory
Massachusetts Institute of Technology

Author Deadlines

Please submit the following information and materials to:

Ms. Francine James
Attn: HPEC 2003
MIT Lincoln Laboratory
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Voice: (781) 981-4842
Fax: (781) 981-2517
E-Mail: hpec@ll.mit.edu

By 22 August, 2003

- Name of Presenter

By 29 August, 2003

- Electronic version of the presentation viewgraphs or poster panels in *Microsoft* PowerPoint format
- Authorization to Publish for the abstract in the Abstract Booklet

By 5 September, 2003

- Copyright Release Form for both the abstract and the presentation viewgraphs/poster panels
- Authorization to Publish for the presentation viewgraphs/poster panels in the Proceedings

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If the above information and materials are not received by these deadlines, the abstract and the presentation/poster cannot be included in the Workshop Abstract Booklet and Proceedings.

Please submit all appropriate information and materials to:

Ms. Francine James
Attn: HPEC 2003
MIT Lincoln Laboratory
244 Wood Street, Room C-385
Lexington, MA 02420-9108
Voice: (781) 981-4842
Fax: (781) 981-2517
E-Mail: hpec@ll.mit.edu

Instructions For Foreign National Attendees

This is a reminder to our foreign national guests attending the HPEC Workshop on 22-25 September 2003 (22 September, U.S. Only Session). You should begin the paperwork for your visit to Lincoln Laboratory immediately. As outlined in the attached procedure you must first contact your embassy. If you have any questions regarding the procedure please contact the Security Office at Lincoln Laboratory (phone: 01-781-981-2402).

The following outlines the process used for DoD foreign national visits.

1. Visitor contacts their embassy in Washington, D.C. Visitor must justify the visit and the need for government-to-government interaction. This is done by producing an invitation for the visit or attendance at meeting/conference and/or explaining the need to process an official DoD visit request because of Lincoln Laboratory's physical location on Hanscom Air Force Base. Although not necessary, it is recommended that the visitor work within the Air Ministry liaison at their embassy.

2. Embassy official enters request for visit in DoD FORDTIS system. If the embassy is not on-line with FORDTIS, they should use the manual process. In both cases the request should be addressed to USAF, SAF/IA. The request should contain the following information:

    a. Cage Code for MIT/LL [3G050]
    b. Mailing address: 244 Wood Street, Lexington, MA 02420-9108
    c. Fax No. (781) 981-0110
    d. Tel No. (781) 981-2402
    e. Visit Point of Contact: Foreign Visits Staff
    f. Tel. No. (781) 981-2402
    g. Visit Dates
    h. Anticipated level of classified information to be involved: This is marked UNCLASSIFIED, unless a special project has been approved and appropriate bilateral security agreements exist.
    i. Purpose of Visit: Specific justification added here.
    j. Embassy Remarks: Additional remarks as required.
    k. U.S. Equipment: Add text concerning any U.S. hardware involved in this visit.
    l. FMS Case: If this visit supports an FMS case, the approved FMS number should be added here.
    m. Program/Agreement: If the visit supports a specific bilateral program its name will be listed here.
    n. Knowledgeable U.S. Person: The embassy should list the U.S. government program manager or sponsor here.

All requests should be forwarded via USAF SAF/IA. Routing to other U.S. Government agencies slows the process considerably.

Once the request is forwarded to USAF it will be staffed by SAF/IA (Secretary of the Air Force/International Affairs). The request will be routed down to USAF ESC/INF (a local USAF office at Hanscom Air Force Base).

ESC/INF will coordinate the visit request with the Security Office at MIT Lincoln Laboratory. Once we respond affirmatively, the foreign embassy will receive notice of approval of the visit.

A few pointers:

This process works best when the request is made promptly. Some foreign embassies place time limits on requests (i.e. 60 days).

Always ensure that the CAGE code (3G050) is on the request. It identifies MIT Lincoln Laboratory in the system.

Foreign embassies may wish to forward a copy of their request to MIT/LL. Courtesy copies can be faxed to P.H. Mahoney (781) 981-0110. The copy should contain the Foreign Visit (FORDTIS) Case ID number. This aids MIT/LL track the visit as it routed through U.S. Government channels.

Lastly, please ensure that the request is routed through USAF.

Questions can be directed to Pat Mahoney at the address below.

Patrick H. Mahoney
Senior Group Administrator
Group 11, Security
(781) 981-2402
F (781) 981-0110
Secure (781) 981-6193
mahoney@LL.MIT.EDU

High Performance Embedded Computing Workshop

22-25 September 2003
(22 September, U.S. Only Session)

PRELIMINARY AGENDA

22-25 September (22 September, U.S. Only Session)

Workshop At A Glance

Day 0 **(U.S. Only** **Session)** 22 September	Check-in/Setup:	1130
	Sessions:	**Session 0**: Advanced Hardware and Space Computing **Poster / Demo S**: Advanced Hardware and Space Computing
Attendance **Restricted to** **U.S. Citizens**	Adjourn:	1700
Day 1 23 September	Check-in/Setup:	0730
		Keynote Address
	Sessions:	**Session 1**: New Challenges/New Architectures **Poster / Demo A**: Applications **Session 2**: Applications **Focus 1**: VSIPL (Session 2 and Focus 1 run in parallel)
	Adjourn:	1650
		Banquet Speaker **Banquet**
Day 2 24 September	Check-in/Setup:	0730
	Sessions:	**Session 3**: Advanced Hardware **Poster / Demo B**: Hardware **Session 4**: Reconfigurable Computing **Focus 2**: Parallel Matlab (Session 4 and Focus 2 run in parallel)
	Adjourn:	1710
Day 3 25 September	Check-in/Setup:	0730
	Sessions:	**Session 5**: Current and Emerging Standards **Poster / Demo C**: Software **Session 6**: Advanced Software
	Adjourn:	1730

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* Denotes presenter other than first author

★ Denotes outstanding submission

LINCOLN LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

22 September (U.S. Only Session)

1130   Check-in / Poster Setup / Lunch

1215   **Welcome**
David Martinez / MIT Lincoln Laboratory

1220   **Opening Remarks**
Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory

1230   **Challenges In Embedded Computing when Applied to Phased-Array Architectures** (Invited)
David Martinez / MIT Lincoln Laboratory

1300   **Session 0: Advanced Hardware & Space Computing**
James Anderson / MIT Lincoln Laboratory

1310   **FPGA Based Radar Processing Using System Level Design Tools**
William Phillips / Northrop Grumman Corp.

1340   **High Performance, Fault Tolerant Computing In Space**
Robert Hillman / Maxwell Technologies

1410   **Poster / Demo S: Advanced Hardware & Space Computing**
James Anderson / MIT Lincoln Laboratory

Poster Session S Précis

Poster S.1   **Integrating Sensor In Network Centric Battlefield Through Sensor Link Protocol**
Gregory Brown / Raytheon Company
Sanjeev Venkatesan / Raytheon Company

Poster S.2   **Utilizing Radar Scene Generation as Risk Reduction for Aegis BMD System Development**
Dan Curtis / Lockheed Martin NE & SS

Poster S.3   **Development of Embedded Synthetic Wide-Band Radar Processing for AEGIS Ballistic Missile Defense**
Wojciech Klimkiewicz
Philip Barile / Lockheed Martin NE & SS
Joseph Cook / Lockheed Martin NE & SS
Nathan Doss / Lockheed Martin NE & SS
Jane Kent / Lockheed Martin NE & SS
Mike Lontoc / Lockheed Martin NE & SS
Edward Monastra / Lockheed Martin NE & SS
Kevin Park / Lockheed Martin NE & SS
John Russo / Lockheed Martin ATL

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22 September (U.S. Only Session) (Continued)

Poster S.4   **An Open Architecture for Next Generation Space Onboard Processing**
David Ngo / BAE Systems
Michael Harris / BAE Systems IEWS
Kenneth Hunt / Air Force Research Laboratory

Poster S.5   **Performance of Adaptive Array Beamforming Using Fixed Point Math**
Steven Shauk / Northrop Grumman

Poster S.6   **Radiation Tolerant Front-end Processor for Wideband Radar Sensors**
William Song / MIT Lincoln Laboratory
James Anderson / MIT Lincoln Laboratory

1420   **Break (View Posters)**

1450   **Session 0 (Continued): Advanced Hardware & Space Computing**
Henk Spaanenburg / Pentum Group, Inc.

1500   **Data Flow Implementation for Space Based Radar Onboard Processing**
John Samson, Jr. / Honeywell Space Systems
Minesh Patel / Honeywell Space Systems

1530   **Migrating High Performance Computing to Space**
John Samson, Jr. / Honeywell Space Systems

1600   **The Design of a 0.13 μm CMOS Embedded Digital Decoder ASIC for an Advanced Digital Receiver**
Charles Snell / Lockheed Martin NE & SS
Melody Jiang / Lockheed Martin NE & SS
Robert Lewis / Lockheed Martin NE & SS
Leopold Pellon / Lockheed Martin NE & SS
Junius Pridgen / Lockheed Martin NE & SS
Dipakkumar Tailor / Lockheed Martin NE & SS

★ 1630   **FPGA Beamforming in a Wideband Airborne Radar System**
Sarah Leeper / MIT Lincoln Laboratory
Ryan Haney / MIT Lincoln Laboratory
Huy Nguyen / MIT Lincoln Laboratory
Michael Vai / MIT Lincoln Laboratory

1700   **Adjourn**

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23 September

0730   **Check-In & Continental Breakfast**

0830   **Welcome**
       David Martinez / MIT Lincoln Laboratory

0835   **Keynote Address**
       Title TBD
       Dr. John Parmentola / Army Director for Research and Laboratory Management

0905   **Opening Remarks**
       Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory

0915   **Session 1: New Challenges and New Architectures**
       David Cousins / BBN Technologies

0925   **Homeland Security: Challenges for the Computing Community** (Invited)
       Dr. Ruth David / President and CEO, ANSER Institute for Homeland Security

0955   **Break**

★ 1010   **The Mercury System: Embedding Computation Into Disk Drives**
       Roger Chamberlain / Washington University
       Ron Cytron / Washington University
       Mark Franklin / Washington University
       Ronald Indeck / Washington University

★ 1040   **Hybrid Optical/Digital Processor for Radar Imaging**
       Keith Frampton / Essex Corporation
       Patrick Stover / Annapolis Micro Systems, Inc.

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LINCOLN LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

23 September (Continued)

1110   **HPCS Application Analysis and Assessment**
Jeremy Kepner / MIT Lincoln Laboratory
David Koester / The MITRE Corporation

1140   **Poster / Demo A: Applications**
Rick Pancoast / Lockheed Martin

Poster Session A Précis

Poster A.1   **Optimizing System Compute and Bandwidth Density for Deployed HPEC Applications**
Randy Banton / Mercury Computer Systems, Inc.
Richard Jaenicke / Mercury Computer Systems, Inc.

Poster A.2   **Parallelization of an Electromagnetic Analysis Tool**
Milissa Benincasa / Black River Systems Company
Chris Card / Black River Systems Company
Alan George / Black River Systems Company

Poster A.3   **Predicting Trends in the Delivered Performance of General-Purpose RISC Processing Platforms in Radar and SIGINT Applications**
Luke Cico / Mercury Computer Systems, Inc.
Mark Merritt / Mercury Computer Systems, Inc.

Poster A.4   **Measuring HPCS Productivity**
Stuart Faulk / University of Oregon
John Gustafson / Sun Microsystems, Inc.
Adam Porter / University of Maryland
Lawrence Votta / Sun CARE

Poster A.5   **The Decomposition of HPEC Applications Mapped to the Natural Decomposition of a Solution Architectures - Another Way to Think About Solving HPEC Problems**
Joseph Germann / SKY Computers, Inc.

Poster A.6   **Development of a High Performance Embedded Radar Video Processor for Target Tracking and Radar Video Distribution**
David Johnson / Primagraphics, Ltd.

Poster A.7   **Software Protection: An Essential Layer of Security**
Jeff Hughes / AFRL / SN

Poster A.8   **Polymorphic Actor-Oriented Design for Heterogeneous Embedded Software**
Edward Lee / University of California at Berkeley

Poster A.9   **A Flexible Software Architecture for High Performance Synthetic Aperture Processing**
Brian Markle / Array Systems Computing, Inc.

Poster A.10   **Health Maintenance System: An Application of Recovery Oriente Computing for HPEC Systems**
Gerry Pocock / SKY Computers, Inc.

Poster A.11   **A Configuration Protocol for Embedded Networked Devices on Secure Wireless Networks**
Larry Sanders / University of Kansas
Joseph Evans / University of Kansas
Benjamin Ewy / Ambient Computing, Inc.

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*   Denotes presenter other than first author

★ Denotes outstanding submission

Poster A.12	**An Open Architecture for an Embedded Signal Processing Subsystem for the Fire Control System MK 92 Combined Antenna System's Radar** Stephen Shank / Lockheed Martin NE & SS Juan Camacho / Indra Miguel del Dicastillo / Indra John Johansson / Lockheed Martin NE & SS William Paterson / Lockheed Martin NE & SS Bernard Pelon / CSPI Eva Ramiro / Indra Francisco Solvez / Indra Leon Trevito / Lockheed Martin NE & SS
Poster A.13	**Partitioning of a Signal Detection Algorithm to a Heterogeneous Multicomputing Platform** Michael Vinskus / Mercury Computer Systems, Inc.
Poster A.14	**Energy and Latency Efficient Design of a Personnel Detection and Tracking System** Edward Wanek / Raytheon Egor Andreev / University of Southern California Julius Bogdanowicz / Raytheon Seonil Choi / University of Southern California Raymond Maylone / Raytheon Sumit Mohanty / University of Southern California Jingzhao Ou / University of Southern California Viktor Prasanna / University of Southern California Ronald Scrofano / University of Southern California

1235   **Lunch (View Posters)**

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23 September (*Continued*)

1345	**Session 2: Applications** Gary Shaw / MIT Lincoln Laboratory **Auditorium**

1355 **LDART: A Large Scale Network of Embedded Systems for Laser Detection and Reciprocal Targeting**
Jathan Manley / Honeywell Labs
Robert Demers / Honeywell Labs
Jan Jelinek / Honeywell Labs
Michael Rhodes / Honeywell Labs
Jay Schwichtenberg / Honeywell Labs
Vicraj Thomas / Honeywell Labs
Brian Van Voorst / Honeywell Labs
Phil Zumsteg / Honeywell Labs

1425 **Open Architecture Implementation for an Embedded Tactical Environmental Processor**
Tom McNellis / Lockheed Martin NE & SS
Dave Lusk / Lockheed Martin NE & SS
Tim Maese / Lockheed Martin NE & SS
Wayne Sabin / Lockheed Martin NE & SS

1455 **Beamforming for Radar Systems on COTS Heterogeneous Computing Platforms**
Jeffrey Rudin / Mercury Computer Systems, Inc.

1525 **Break (View Posters)**

1550 **Using Rational Rose RealTime to Develop a High Performance Radar Signal Processor (A Case Study)**
Kevin Obenland / SAIC
Stephen Clark / SAIC
Travis Slocumb / SAIC

1620 **Future Trends In High End Computing and the Impact on HPEC**
Robert Peterkin, Jr. / DoD High Performance Computing

1650 **Adjourn**

1345	**Focus 1: VSIPL** James Lebak / MIT Lincoln Laboratory **Room S2-180**

★ **1355** **Successful VSIPL Software Application Migration- A Case Study: NATO Seasparrow Illumination Radar Signal Processing**
Daniel Averill / Avatar Engineering, Inc.

1425 **VSIPL++/FPGA Design Methodology**
Jules Bergmann / AFRL / IFTC
Pete Bronowicz / ITT
Sue Emeny / ITT

1455 **VSIPL for Diverse Architectures (Pentium 4 to DSPs)**
Brian Chase / MPI Software Technology, Inc.
Anthony Skjellum / MPI Software Technology, Inc.
Wenhao Wu / MPI Software Technology, Inc.

1525 **Break**

1550 **High Performance Embedded Computing Software Initiative (HPEC-Si)**
Jeremy Kepner / MIT Lincoln Laboratory

1620 **Terminal Doppler Weather Radar (TDWR) Radar Data Acquisition (RDA) Subsystem Upgrade**
Gabriel Elkin / MIT Lincoln Laboratory
Nathan Parker / MIT Lincoln Laboratory

1650 **VSIPL++ Serial and Parallel Performance**
Mark Mitchell / CodeSourcery, LLC
Jeffrey Oldham / CodeSourcery, LLC
Nathan Sidwell / CodeSourcery, LLC

1700 **Reception (View Posters)**

1800 **Banquet Presentation**
Title TBD
Dr. Ray Kurzwell / Kurzweil Technologies

1845 **Banquet**

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24 September

0730   **Check-in & Continental Breakfast**

0830   **Announcements**
Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory

0835   **Title TBD** (Invited)
Mr. John Bourgoin / MIPS Technologies

0905   **Session 3: Advanced Hardware**
Joseph Germann / SKY Computers, Inc.

0915   **Area and Power Performance Analysis of a Floating-point Based Application on FPGAs**
Gokul Govindu / University of Southern California
Seonil Choi / University of Southern California
Padma Gundala / University of Southern California
Viktor Prasanna / University of Southern California
Ling Zhuo / University of Southern California

0945   **An FPGA Implementation of Three-Dimensional Finite-Difference Time-Domain (FDTD) Algorithm**
Wang Chen / Northeastern University
Panos Kosmas / Northeastern University
Miriam Leeser / Northeastern University
Carey Rappaport / Northeastern University

1015   **Break**

1030   **High-Performance Scalable Base-4 Fast Fourier Transform Mapping**
Greg Nash / Centar

1100   **Digital Signal Processing at 1 GHz in a Field-Programmable Object Array**
Dirk Helgemo / MathStar, Inc.

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24 September (Continued)

1130

> **Poster / Demo B: Hardware**
> Michael Vai / MIT Lincoln Laboratory

Poster Session B Précis

Poster B.1   **Application of General Purpose HPC Systems in HPEC**
David Alexander / Silicon Graphics, Inc.

Poster B.2   **Switched-Fabric Interconnects**
William Carson / VMETRO, Inc.
Tom Bohman / VMETRO, Inc.

Poster B.3   **Integrated Architectural Level Power-Performance Modeling Toolkit**
David Brooks / Harvard University

Poster B.4   **Efficient Split Radix FFTs in FPGAs**
Tom Dillon / Dillon Engineering, Inc.

Poster B.5   **Considerations for Algorithm Selection and C Programming Style for the SRC-6E Reconfigurable Computer**
Russ Duren / Naval Postgraduate School
Douglas Fouts / Naval Postgraduate School

Poster B.6   **An FPGA-based Architecture for VideoSAR Image Formation**
Michael Holzrichter / Sandia National Labs
Phillp Ortiz / Sandia National Labs

Poster B.7   **High-Performance Linear Algebra Processor Using FPGA**
Jeremy Johnson / Drexel University
Prawaat Nagvajara / Drexel University
Chika Nwankpa / Drexel University

Poster B.8   **Development of an FPGA-Based Two-Transform Pulse Compressor**
Skip Mansur / Integrated Sensors, Inc.

Poster B.9   **Acceleration of the Retinal Vascular Tracing Algorithm Using FPGAs**
Shawn Miller / Northeastern University
Miriam Leeser / Northeastern University

Poster B.10   **High-Speed Data Recording in Sensor Systems**
Ronnie Sanford / VMETRO, Inc.
Tom Bohman / VMETRO, Inc.

Poster B.11   **The eXtreme Adaptive DSP Solution to Sensor Data Processing**
Martin Vorbach / PACT XPP Technologies
Leo Mirkin / SKY Computers, Inc.

1225   Lunch (View Posters)

LINCOLN LABORATORY
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

25 September

0730   **Check-In & Continental Breakfast**

0830   **Announcements**
Robert Bond and Jeremy Kepner / MIT Lincoln Laboratory

0835   **Title TBD** (Invited)
Dr. Mari Maeda / National Science Foundation

0905   **Session 5: Current and Emerging Standards**
Craig Lund / Mercury Computers Systems, Inc.

0935   **An Update on CORBA Performance for HPEC Algorithms**
Bill Beckwith / Objective Interface Systems, Inc.

1005   **VXS, A High Speed Cu Switch Fabric Interconnect for VME**
Henry Wong / Motorola
James Fedder / Tyco Electronics
James Thompson / Naval Surface Warfare Center

1020   **Break**

1035   **UML**

1050   **Real Time Java**

1105   **Data Reorganization Initiative**
Kenneth Cain / Mercury Computer Systems, Inc.
Myra Prelle / Mercury Computer Systems, Inc.

1120   **Poster / Demo C: Software**
David Cousins / BBN Technologies

Poster Session C Précis

Poster C.1   **An Overview of the Common Component Architecture**
Robert Armstrong / Sandia National Labs

Poster C.2   **Gedae Runtime Kernel Performance Characterization**
Kerry Barnes / Gedae, Inc.
William Lundgren / Gedae, Inc.

Poster C.3   **A Middleware for Embedded Adaptive Dependability**
Tom Bracewell / Raytheon IDS
Priya Narasimhan / Carnegie Mellon University

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Poster C.4   **The Earth System Modeling Framework: A High-Performance Software Architecture and Infrastructure for Climate and Weather Applications**
Cecelia DeLuca / NCAR

Poster C.5   **High-Performance Code Generation for FIR Filters and the Discrete Wavelet Transform Using SPIRAL**
Aca Gacic / Carnegie Mellon University
Jose Moura / Carnegie Mellon University
Markus Pueschel / Carnegie Mellon University

Poster C.6   **Distributed Real-Time Embedded Video Processing**
Tiehan Lv / Princeton University
Burak Ozer / Verificon Corporation
Wayne Wolf / Princeton University

Poster C.7   **R-Stream: Enabling Efficient Development of Portable, High-Performance, Parallel Applications**
Peter Mattson / Reservoir Labs, Inc.
Richard Lethin / Reservoir Labs, Inc.
Allen Leung / Reservoir Labs, Inc.
Kenneth Mackenzie / Reservoir Labs, Inc.
Eric Schweitz / Reservoir Labs, Inc.
Peter Szilagi / Reservoir Labs, Inc.

Poster C.8   **High Performance Flexible DSP Infrastructure Based on MPI**
Tom McClean / Lockheed Martin NE & SS
Stephen Shank / Lockheed Martin NE & SS

Poster C.9   **Building the Support for Radar Processing Across Memory Hierarchies: On the Development of an Array Class with Shapes Using Expression Templates in C++**
Lenore Mullin / University of Albany
Lawrence Bush / Rensseler Polytechnic Institute
Xingmin Luo / University of Albany

Poster C.10   **Simulation and Real-Time Verification of Video Algorithms on the TI C6400 Using Simulink**
Donald Orofino / The MathWorks, Inc.

Poster C.11   **Energy Aware Computing Through Randomization: From Models and Algorithms to Randomized Semiconductor Devices**
Krishna Palem / Georgia Institute of Technology

Poster C.12   **Low Overhead Real-Time Computing with General Purpose Operating Systems**
Michael Raymond / Silicon Graphics, Inc.

Poster C.13   **Dynamic Resource Management for a Sensor-Fusion Application via Distributed Parallel Grid Computing**
Albert Reuther / MIT Lincoln Laboratory
Joel Goodman / MIT Lincoln Laboratory

Poster C.14   **An Alternative Method for Retrieval Distributed Data**
Jaime Vazquez. University of the Valley of Mexico-campus Tlalpan

Poster C.15   **DAFS Storage for High Performance Computing Using MPI-I/O: Design and Experience**
Vijay Velusamy / MPI Software Technology
Peter Corbett / Network Appliance, Inc.
Arkady Kanevsky / Network Appliance, Inc.
Anthony Skjellum / MPI Software Technology

1215   **Lunch (View Posters)**

1325 **Session 6: Advanced Software**
Albert Reuther / MIT Lincoln Laboratory

1335 **Title TBD** (Invited)
Dr. Craig Lee / Aerospace Corporation

1405 **Distributed Embedded Real-Time Agent Resource Management**
Carl Hein / Lockheed Martin ATL
Aron Rubin / Lockheed Martin ATL

1435 **Internet Worm and Virus Protection for Very High-Speed Networks**
John Lockwood / Washington University

1505 **Break (View Posters)**

1530 **Evolution of the Milieu Approach for Software Development for the Polymorphous Computing Architecture Program**
Yoginder Dandass / Mississippi State University
Ben Abbott / Southwest Research Institute
Theodore Bapty / ISIS/Vanderbilt University
Anthony Skjellum / MPI Software Technology
Charles Summey / MPI Software Technology
Hong Yuan / MPI Software Technology

1600 **The Morphware Stable Interface: A Software Framework for Polymorphous Computing Architectures**
Dan Campbell / Georgia Institute of Technology
Dennis Cottel / SPAWAR Systems Center
Randall Judd / SPAWAR Systems Center
Kenneth Mackenzie / Reservoir Labs, Inc.
Mark Richards / Georgia Institute of Technology

1630 **Multimedia Macros for Portable Optimized Programs**
Juan Carlos Rojas / Northeastern University
Miriam Leeser / Northeastern University

1700 **New FFTW Developments**
Matteo Frigo

1730 **Adjourn**