

***FRONTIERS FOR DISCOVERY IN
HIGH ENERGY DENSITY PHYSICS***

HEDP Task Force

**HIGH ENERGY DENSITY PHYSICS
TASK FORCE CHARGE AND
GOALS OF WORKSHOP**

**Presented by
Ronald C. Davidson
Princeton Plasma Physics Laboratory
Princeton University**

WORKSHOP ON HIGH ENERGY DENSITY PHYSICS
Gaithersburg, Maryland
May 24 - 26, 2004

HEDP TASK FORCE MEMBERSHIP

HEDP Task Force

Ronald C. Davidson, Chair, Princeton University

Tom Katsouleas, Vice-Chair, University of Southern California

Jonathan Arons, University of California at Berkeley

Matthew Baring, Rice University

Chris Deeney, Sandia National Laboratories

Louis DiMauro, Ohio State University

Todd Ditmire, University of Texas, Austin

Roger Falcone, University of California, Berkeley

David Hammer, Cornell University

Wendell Hill, University of Maryland, College Park

Barbara Jacek, State University of New York, Stony Brook

Chan Joshi, University of California, Los Angeles

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Fred Lamb, University of Illinois, Urbana

Richard Lee, Lawrence Livermore National Laboratory

B. Grant Logan, Lawrence Berkeley National Laboratory

Adrian Mellisinos, University of Rochester

David Meyerhofer, University of Rochester

Warren Mori, University of California, Los Angeles

Margaret Murnane, University of Colorado, Boulder

Bruce Remington, Lawrence Livermore National Laboratory

Robert Rosner, University of Chicago

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Dieter Schneider, Lawrence Livermore National Laboratory

Isaac Silvera, Harvard University

James Stone, Princeton University

Bernard Wilde, Los Alamos National Laboratory

William Zajc, Columbia University

Ronald McKnight, Secretary, Gaithersburg, Maryland

TASK FORCE CHARGE AND APPROACH

HEDP Task Force

In response to the January 13, 2004, charge letter from Joe Dehmer on behalf of the Interagency Working Group, the HEDP Task Force is addressing the following key charge areas in order to identify the major components of a national high energy density physics program:

1. Identify the principal research thrust areas of high intellectual value that define the field of high energy density physics;
2. For each of the thrust areas, identify the primary scientific questions of high intellectual value that motivate the research;

TASK FORCE CHARGE AND APPROACH

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3. Develop the compelling scientific objectives and milestones that describe what the federal investment in high energy density physics are expected to accomplish;
4. For each principal thrust area, identify the frontier research facilities and infrastructure required to make effective progress; and
5. Identify opportunities for interagency coordination in high energy density physics.

TASK FORCE WORKING GROUPS

HEDP Task Force

A - HEDP in Astrophysical Systems

Rosner (Chair), Arons, Baring, Lamb, Stone

B - Beam-Induced HEDP (RHIC, heavy ion fusion, high-intensity accelerators, etc.) Joshi (Chair), Jacak, Logan, Mellisinos, Zajc

S - HEDP in Stockpile Stewardship Facilities (Omega, Z, National Ignition Facility, etc.) Remington (Chair), Deeney, Hammer, Lee, Meyerhofer, Schneider, Silvera, Wilde

U - Ultrafast, Ultraintense Laser Science

Ditmire (Chair), DiMauro, Falcone, Hill, Mori, Murnane

TASK FORCE INFORMATION COLLECTION AND WORKSHOP PREPARATION

HEDP Task Force

1. Discuss and address the charge areas through frequent conference calls (typically bi-weekly), e-mail exchanges, etc.
2. Actively solicit input from scientific colleagues in the field.
3. For each research thrust area develop a short list of *compelling questions of high intellectual value* plus short, persuasive *Scientific-American -level* supporting narratives.
- 4.. For each principal research thrust area, the Working Groups should develop a four-page (maximum) narrative description of the scientific objectives/milestones, frontier research facilities, time-line, resource requirements, etc., required to achieve the principal scientific objectives.
5. Identify key speakers to make presentations at the Workshop.

KEY BACKGROUND REFERENCES FOR TASK FORCE DELIBERATIONS

HEDP Task Force

1. *Connecting Quarks with the Cosmos: Eleven Science Questions for the New Century* (National Academies Press, 2003);
2. *Frontiers in High Energy Density Physics - The X-Games of Contemporary Science* (National Academies Press, 2003);
3. *The Science and Applications of Ultrafast, Ultraintense Lasers: Opportunities in Science and Technology Using the Brightest Light Known to Man* (Report on the SAUUL Workshop, June 17-19, 2002); and
4. Pertinent technical reviews and federal advisory committee reports.

HEDP Task Force