

**High Energy Density Science**

**Users Project - HEDSUP**

**(A Component of the nascent High  
Energy Density Science Association)**

**Bedros Afeyan & David Hammer**

**Interagency Working Group on HEDP**

**Germantown MD**

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# HEDSA & HEDSUP

- **HEDSA** is a newly formed advocacy group for high energy density science whose members are academic and private sector researchers actively involved in HEDP research.
- **HEDSUP** is a component of HEDSA with the specific mission of securing adequate funding and access to HEDP facilities as well as coordinating research teams and facilitating interactions between national labs and HEDSA members.
- **HEDSA** will do community promotion of the field, outreach, “recruiting,” advertising and advocacy work on behalf of HEDP scientists in the private sector and at our universities.

# Organizational Steering Committee (OSC)

## Members of HEDSA and Their Current Responsibilities

- David Hammer (Cornell U.) **Chairman and Meetings/Workshops**
- Bedros Afeyan (Polymath Research) **Vice-Chair and responsible for development of HEDSUP**
- Paul Drake (U. Michigan) **Secretary/Treasurer and diagnostics initiatives**
- Margaret Murnane (U. Colorado) **Communications and Community Outreach**
- Warren Mori (UCLA) **Student Affairs & Computing Resources initiative**
- Ron Davidson (Princeton U.) **Elections (and Ombudsman)**

# Mission Statement of HEDSUP

- **Promote and facilitate the execution of HEDP experiments by diverse teams of academic and industrial HED scientists at US HED facilities (whether they be small, intermediate or large scale, identified below).**
- **Facilitate the collaboration of national lab staff and scientists with HEDSA scientists on HEDSUP projects.**
- **Coordinate with NNSA, OFES and the national labs to help resolve funding and staffing issues to ensure 1 experiment/year/facility and then 2/year/facility outside science usage rates or until it becomes a stand-alone national program with a wide call for proposals.**
- **Bring new scientists into the HEDSUP family of researchers by pairing them with existing experts. This will be an important “positive” in the evaluation of new proposals.**
- **Promote the participation and the training of students and post docs in HEDP research.**

# **Mission Statement of HEDSA**

## **(Other than HEDSUP)**

- **An association to enable academic and private sector scientists working on High Energy Density Physics (HEDP) to organize and facilitate collaborations, and to advance their field.**
- **To organize annual workshops dedicated to the exchange of the latest information and newest results amongst HEDP scientists & National Lab collaborators.**
- **To keep the government and its agencies abreast of the university and private sector view of the “health” of HEDP. (For example,  $\geq 10\%$  funding cut ... )**

# **Large Scale Machines of Interest to HEDSUP Scientists**

- NIF**                      **192 beam ~ 1 MJ laser**      **LLNL**
- Omega**                    **60 beam laser ~ 30 KJ**      **UR LLE**
- ZR**                        **26 MA Z Pinch**                      **SNL**

# **Intermediate Scale Machines of Interest to HEDSUP Scientists**

- Z Beamlet laser facility SNL**
- Jupiter laser facility LLNL**
- Trident laser facility LANL**
- OMEGA EP UR LLE**
- NIKE & Electra NRL**
- (OMEGA - - NLUF) UR LLE**

# **Smaller, University Scale Machines of Interest to HEDSUP Scientists**

- **Texas Petawatt laser at UT**      **UT, Austin**
- **UNR Z pinch and laser**      **UN, Reno**
- **Cornell Z pinch**      **Ithaca, NY**
- **Ohio State laser facility**
- **Others**

# **Question for you: Might a consolidation of fundamental HED Research within the DOE Office of Science Benefit the Vitality of HEDP Research in the US?**

- **A vision of success for HEDP research** -- the pursuit of excellence, and its long term vitality, by training the next generation of scientists-- might require a new **dedicated organization within the DOE Office of Science** to **FOCUS** on HEDP and to promote its growth.
- The responsibilities of this office could encompass funding of programs in direct drive ICF, IFE, Fast Ignition, and other **innovative ICF concepts**; university- and private sector- based laser-plasma interaction research, Z pinch physics, novel radiation source development, laboratory astrophysics, and the basic science of states of matter under extreme conditions.

## **.... the Vitality of HEDP Research in the US (Continued)**

- HEDSUP research now funded through existing programs would pave the way for such an organization to materialize.
- This can only become a reality through the help of both **NNSA** and **OFES** and their steady support.
- **HEDSUP** research would then be part of a **peer-reviewed program within this new office.**

# Summary & Conclusions

- We have only just begun to coordinate and to advocate!
- **HEDSA** just had its charter and bylaws approved as of yesterday and thus has launched itself in earnest.
- **HEDSUP** is working towards the realization of one new user experiment per available intermediate scale HEDP facility for FY '07 (Titan, Trident, Z beamlet).
- We would like to see a ramp up to two experiments per facility per year by '08, simultaneously with or following a national call for proposals and the creation of a systematic and well funded program.
- **We can use your help! Advice, feedback, cooperation, further funding opportunities, ...**