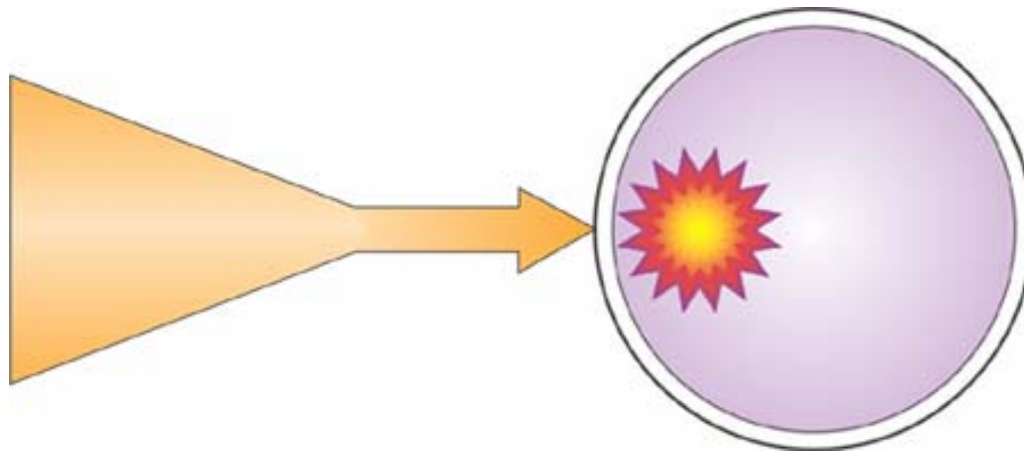


# FUSION SCIENCE CENTER FOR EXTREME STATES OF MATTER AND FAST IGNITION PHYSICS



## OVERVIEW



**R. Betti**

**for the Fusion Science Center team**

**UR, MIT, UCSD, OSU, UNR, UT, UCLA, GA, LLNL**

# FSC Members -Faculty and Research Scientists



**F. Beg (UCSD)**  
**R. Betti (UR-LLE)**  
**D. Correll (LLNL)**  
**T. Cowan (UNR)**  
**T. Ditmire (UT)**  
**R. Freeman (OSU)**  
**M. Key (LLNL)**  
**C. Li (MIT)**

**D. Meyerhofer (UR-LLE)**  
**W. Mori (UCLA)**  
**R. Petrasso (MIT)**  
**C. Ren (UR-LLE)**  
**F. Seguin (MIT)**  
**Y. Sentoku (UNR)**  
**R. Stephens (GA)**  
**L. Van Woerkom (OSU)**

# FSC Post docs and Graduate Students



## *Members - Post docs*

**K. Anderson (UR)**  
**E. Baronova (UCSD)**  
**O. Gotchev (UR)**  
**F. He (UCSD)**  
**P. Nelson (UR-starting '06)**  
**J. Pasley (GA)**  
**A. Solodov (UR)**  
**J. Tonge (UCLA)**

## *Graduate Students*

**D. Casey (MIT)**  
**C. Chen (MIT)**  
**G. Dyer (UT)**  
**B. Ick Cho (UT)**  
**N. Jang (UR)**  
**S. Kneip (UT)**  
**E. Shipton (UCSD)**  
**M. Tzoufras (UCLA)**  
**C. Zhou (UR)**

# FSC Collaborators and Administrators



## *Collaborators - Research Scientists*

**J. Delettrez (UR-LLE)**

**J. Knauer (UR-LLE)**

**J. Myatt (UR-LLE)**

**C. Sangster (UR-LLE)**

**V. Smalyuk (UR-LLE)**

**C. Stoeckl (UR-LLE)**

**W. Theobald (UR-LLE)**

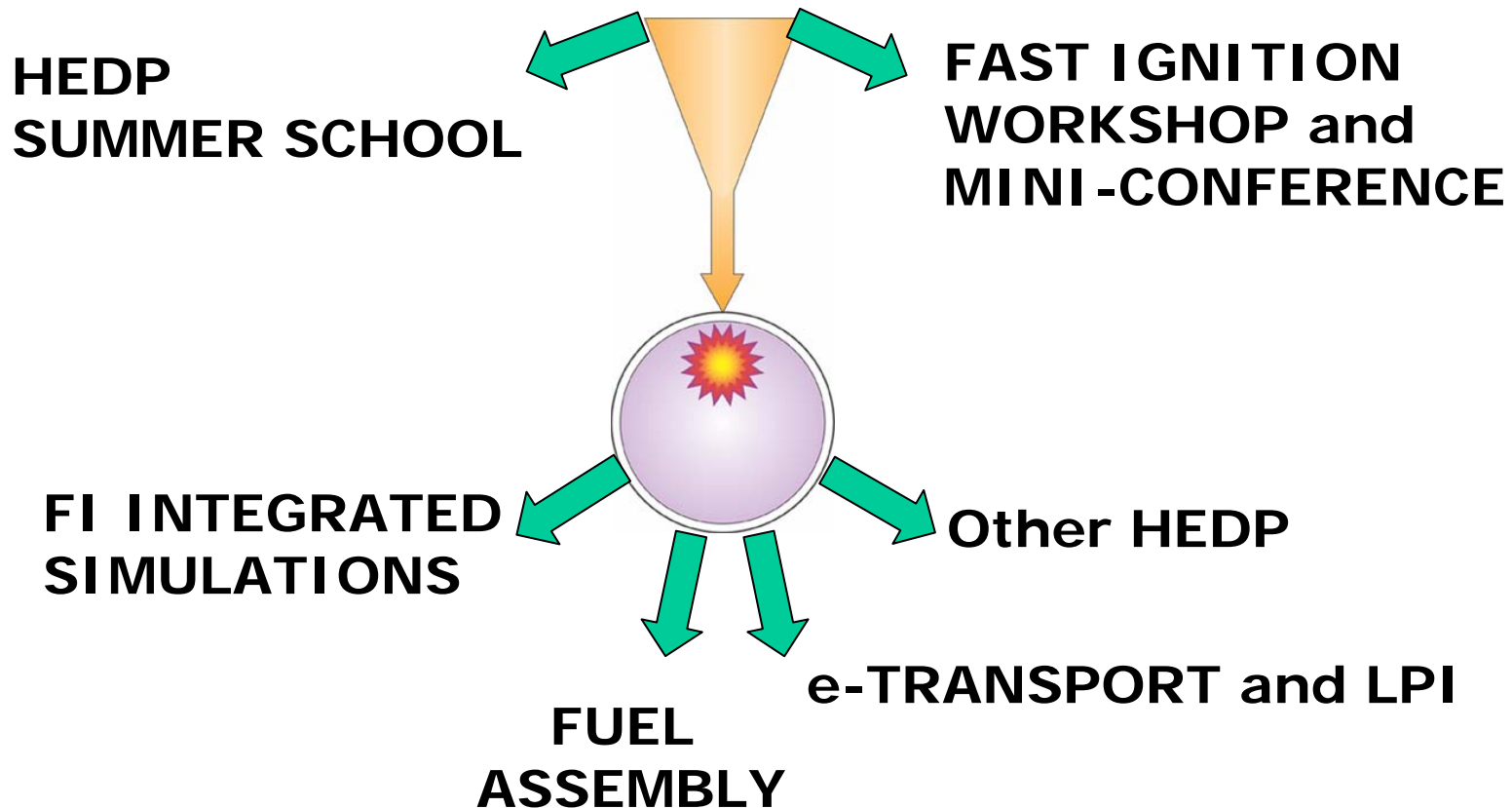
**M. Wei (UCSD)**

## *Administrators*

**M. Kyle (UR-LLE)**

**J. Morris (UR)**

# HEDP research and education are the main objectives of the FSC



# The FSC experimental activities are proceedings forward



- Most of the objectives in the fuel assembly experiments on OMEGA have been met
- First e-transport experiments on wire targets have been carried out at RAL
- MIT is leading a new experiment on OMEGA to measure B-fields during FI fuel assembly (Shots scheduled for February)
- Positive feedback on FSC activities from the last OFES budget meeting

# The purpose of this meeting is to present and discuss the latest results as well as to coordinate future activities



- Updates on PIC, Hybrid and Hydro simulations of Fast Ignition (UR,UCLA,UNR)
- Updates on the electron transport experiments (UCSD/GA/OSU/LLNL/UT)
- Updates on Fuel Assembly on OMEGA
- Updates on Shock Ignition
- The new MIT experiment
- The Fast Ignition Workshop
- The 2007 HEDP Summer School

The FSC is sponsoring the 9<sup>th</sup> international  
**FAST IGNITION WORKSHOP**  
NOVEMBER 3-5, 2006, Kendall Square Marriot,  
CAMBRIDGE, MA



# 62 abstracts have been submitted to the Fast Ignition workshop



**Invited talks on facilities:** Meyerhofer, Moses, Mima, Dunne, Van Woerken

**Invited talks on short pulse experiments:** McKinnon, Lancaster, Fuchs, Yanaka, Beg,

**Invited talks on short pulse theory & simulations:** Johzaki, Honrubia, Shvets, Lasinsky

**Invited talks on fuel assembly and gain:** Atzeni, Solodov, Town, Theobald, Perkins

**21** contributed orals

**22** contributed poster

**Total: 62 presentations**

# HEDP Summer School: who, where, when?



**Same location as last year?**

Kerr-Clark Campus at UC Berkeley

**Same time frame?** August 7-13

**Same duration?** 1 Week

**Same format?** Lectures + Tours + Posters.  
Increase student participation through homework.

**Who is in charge?** Beg and Petrasso

**Funding?** Tax to the FSC. Matching funds?

# Three new task forces to report at the September conference call



## **HEDP summer school task force:**

Beg, Betti, Petrasso on the new format of the summer school. How to increase student participation

## **Task force on facilities and future experiments:**

Li, Petrasso, Beg, Stephen, Van Woerkom

What new experiments can be done on the new facilities Titan, Z-PW, NTF?

MIT leading an experiment on short pulse lasers?

## **Task force on Integrated Simulation**

Ren, Sentoku, Mori, Tonge, Solodov. Do we have the tools for reliable integrated FI simulations?

If not, what needs to be done?

# Next FSC meeting in San Diego, organized by GA/UCSD



February 12-13, 2007?

## **MONDAY AFTERNOON**

9.30AM-12.00 PM Tours of Titan and NIF

12:00-1:30 lunch

1:30-1:40PM **R. Freeman**: Welcome and logistics

1:40PM - 2:15PM **R. Betti**: Overview of the FSC and Action Items

2:15-2:30 Coffe Break

**Session on Fast Ignition simulations** (Chair: A. Kemp)

2:30–3:00 **Y. Sentoku**: Integrated PICLS simulations

3:00-3:30 **W. Mori**: OSIRIS code development and FI simulations

3:30-4:00 **C. Ren**: Hole boring simulations for OMEGA EP

4:00-4:30 **A. Solodov**: Hydrodynamic FI simulations

4:30-5:30 Discussion

# TUESDAY MORNING

## **Session on Facilities** (Chair M. Key)

8:30-8:50 **E. Moses:** Fast Ignition at LLNL

8:50-9:10 **D. Meyerhofer:** status and prospects for OMEGA/OMEGA-EP

9:10-9:30 **T. Cowan:** status and prospects of the Nevada Terawatt Facility

9:30-9:50 **L. Van Woerkom:** the OSU short-pulse laser facility

9:50-10:10 **P. Patel:** the TITAN short pulse facility

10:10-10:30 **T. Ditmire:** the UT short pulse facility

10:30-10:45 Coffe Break

## **Session on Fuel Assembly** (Chair: Meyerhofer)

10:45-11:10: **R. Betti:** Fast Ignition Fuel Assembly (Theory and Experiments)

11:10-11:35: **C. Li:** Magnetic Field Measurements in FI implosions

11:35-12:05 **Discussion**

12:00-1:30 Lunch

## TUESDAY AFTERNOON

### Session on Electron Transport (Chair. Ren)

1:30-1:55 **F. Beg**: Latest results on the FSC electron-transport experiments

1:55-2:20 **M. Key**: Updates on RAL and Titan experiments

2:20-2:45 **T. Ditmire**: The UT fast electron generation experiments in cones and pyramids

2:45-3:10 **R. Freeman**: OSU activities on electron transport

3:10-3:25 Coffee Break

3:25-3:35 **R. Betti**: Updates on shock ignition

3:35-4:00 **R. Stephens**: Updates on FI target fabrication

4:00-5:00 Summary and Discussion