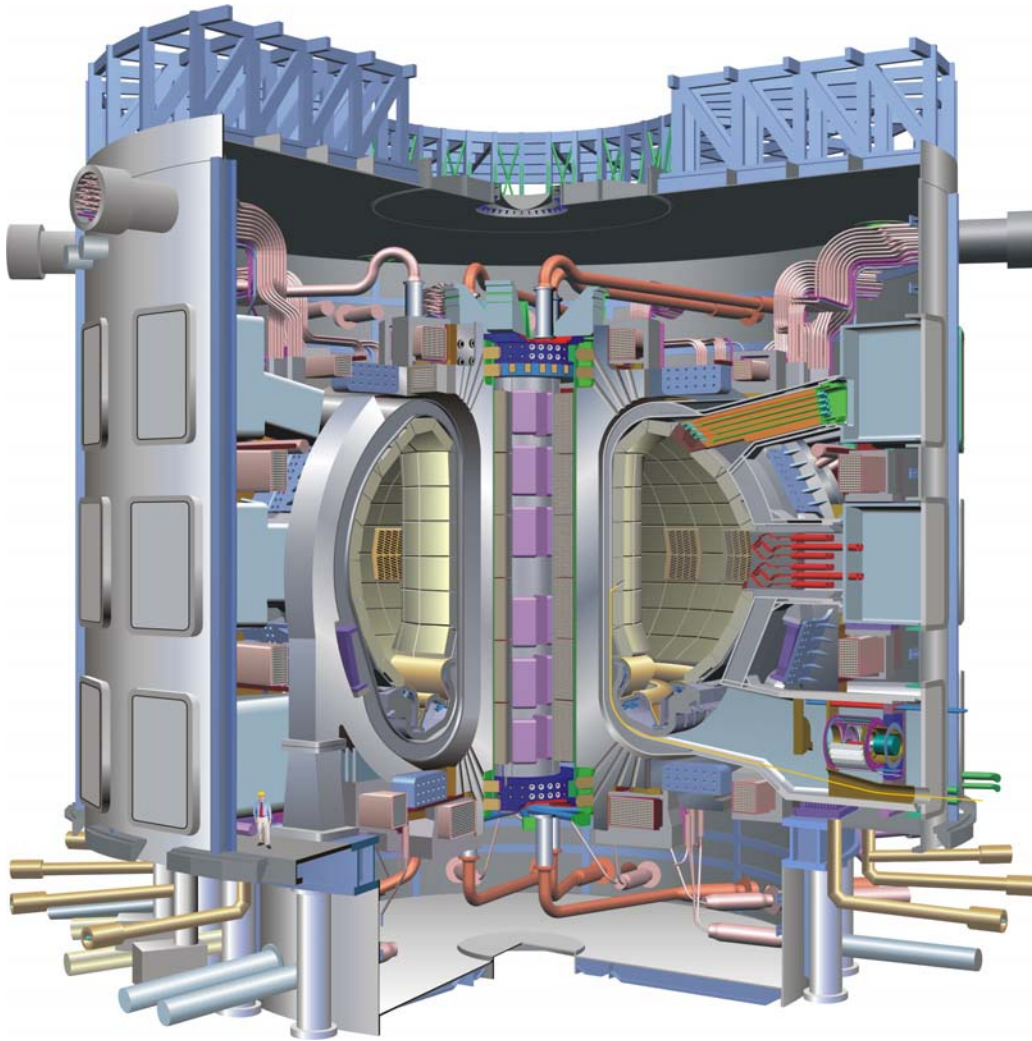


U.S. BPO Panel: Planning for ITER



Presented by Earl Marmor
MIT Dept. of Physics and
Plasma Science and Fusion Center

Meeting of the NAS CRISPPP Panel
Washington, DC
December 14, 2007

Panel on Long-Range Burning Plasma Program Planning

U.S. Burning Plasma Organization

At the behest of OFES, the USBPO Council set up a panel to examine long term strategies for the US Burning Plasma Program

- Scope
 - ~Decade leading up to ITER burning plasma operation
 - Burning plasma research on ITER, including domestic activities in support of the research
 - Issues looking beyond ITER to the ultimate energy goal

Panel formed summer 2007

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- Members provide broad cross-section of expertise
 - Steve Allen, LLNL
 - Plasma boundary physics
 - Michael Bell, PPPL
 - Transport; member of the international team developing integrated ITER research plan
 - Paul Bonoli, MIT
 - Wave-plasma interactions, modeling
 - Bill Heidbrink, UC Irvine
 - Energetic Particle Physics
 - Steve Knowlton, Auburn U.
 - Stellarators, Wave-plasma interaction experiments
 - Earl Marmor, MIT (Chair)
 - Tokamak physics
 - Farrokh Najmabadi, UCSD
 - Fusion Engineering, Reactor Design
 - Hutch Neilson, PPPL
 - Stellarators
 - Martin Peng, ORNL
 - Low-aspect ratio tokamaks
 - Phil Snyder, GA
 - MHD stability theory and modeling, Pedestal physics
 - Ted Strait, GA
 - Macro-stability
 - George Tynan, UCSD
 - Transport, Plasma-Material interactions
 - Nermin Uckan, ORNL
 - Fusion Engineering; USBPO Assistant Director for ITER Liaison

Organizing our report around 6 research topics

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- Topics follow the 2005 FESAC report *Scientific Challenges, Opportunities and Priorities for the US Fusion Energy Sciences Program** with **one addition**
 - Macrostability
 - Waves and Energetic Particles
 - Transport
 - Plasma Boundary Science
 - Fusion Engineering
 - **Integrated Burning Plasma System**
 - **Cross-cutting issues**

*http://www.ofes.fusion.doe.gov/more_html/FESAC/PP_Rpt_Apr05R.pdf

Follow-on activity to the Fonck panel report*

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Answer 3 questions for each topic:

1. What is the US research agenda for ITER?
 2. How will ITER promote progress toward making fusion a reliable and affordable source of power, and how should this progress be assessed?
 3. How does ITER relate to other elements of the US Fusion Energy Sciences program
- Ongoing process:
 - ITER research agenda evolves

Process and Schedule

U.S. Burning Plasma Organization

- Panel meets primarily through video/teleconferences
- Use of the BPO forum (web-based) and e-mail to share documents and iterate
- Committee divided into subgroups to examine each topic in detail
- Expect to complete our report to BPO Council early Spring 2008