



U.S. DEPARTMENT OF
ENERGY

Office of
Science

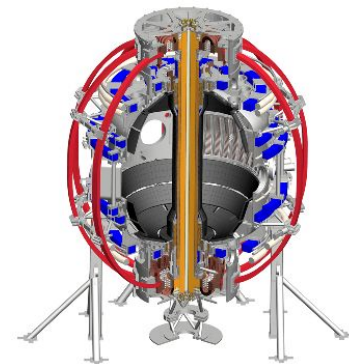


NSTX-U / Magnetic Fusion Science Meeting

June 24, 2019

Agenda

1. Calendar, community planning update
2. New ideas in stellarator design (*M. Zarnstorff*)



Upcoming meetings, deadlines, ...

- EPS-DPP (July 8-12), Milan
- CPP MFE/FM&T Workshop #1 (July 22-26), Madison, WI
 - [Registration now open](#)
 - Book hotels through Graycar for GSA rate at Best Western
- Theory & Simulation of Disruptions Workshop (Aug 5-7), PPPL
- IAEA TM on EP (Sept. 3-6), Japan
- ISHW (Sept 23-27), Madison (~~abstracts due May 15~~)
- Symposium on Liquid Metals (Sept 30 - Oct 3), Urbana-Champaign, Illinois (~~abstracts due May 24~~)
- H-mode WS (Oct. 9-11), Shanghai (*abstracts due July 1*)
- APS-DPP (Oct 21-25), Ft. Lauderdale (~~invited nominations due May 8~~)
- ST Workshop (Oct. 28-31), Frascati, Italy (*abstracts due Sept. 1*)
- MHD Workshop (Oct 28-30), Columbia University
- AAPPS-DPP (Nov. 4-8), Hefei (~~invited abstracts due April 15; contributed due June 15~~)

Community planning activities - get involved!

- DPP-CPP website (evolving): <https://sites.google.com/pppl.gov/dpp-cpp>
- Join DPP-CPP google group: <https://groups.google.com/forum/#!forum/dpp-cpp>
- Calendar of upcoming and ongoing events here:
<https://sites.google.com/pppl.gov/dpp-cpp/home/calendar>
- Upcoming Workshops
 - **[MFE and FM&T Workshop #1](#)** ~ July 22-26, Madison WI
 - Discovery Plasma Science Workshop - July 23-25, Madison WI
 - High Energy Density Physics Workshop - July 16-17 (D.C. area)
- Submission of initial proposals due July 1 for consideration at workshop
- See [PPPL FESAC Response Task Force](#) for some information on PPPL-related initiatives
- **Draft of NSTX-U initiative proposal finished (Battaglia, Podesta, Kaye) - any questions, comments, suggestions?**
- Join [Expert Groups](#) to help evaluate initiatives
 - Expert Groups have been meeting regularly
 - First initiatives for evaluation [are posted](#)
- **This FES long-range planning activity will only be successful if the community engages!**

Initiative proposal template

(red emphasis mine)

Goals of Initiative

- *What scientific or technological questions does the initiative expect to answer? How will success be defined? This can include reaching decision points for design choices and the advancement of TRLs.*

Description of the Initiative

- *What type of resources and activities would the initiative include? How are existing DOE-funded equipment and user facilities utilized? Are new equipment or facilities required? Does this require enhanced experimental, computational or theoretical research in established topical areas? Is increased participation required in industry or international collaborations?*

Programmatic Benefit

- *Describe how the initiative will advance fusion energy and plasma science. Be explicit in describing how this initiative will address critical issues, gaps, and opportunities described in recent FESAC, NAS reports or other strategic planning activities like community workshops. Which stakeholders (e.g. public and/or private) benefit from this initiative?*

US Leadership and Global Context

- *How does this initiative maintain or enhance US leadership? Does it extend beyond current or pending worldwide research capabilities? Based on current and near-term US capabilities, is access to international capabilities required for this initiative?*

Timeline of the Initiative

Science and Technology Readiness

- *When will it be scientifically and technically possible to start this initiative (e.g. 1-2 years, 2-5 years, 5+) and what other activities/initiatives need to be completed first? What questions need to be answered before this initiative is ended or undergo significant modification to address the new scope? What is the anticipated timeline for this?*

Community Preparedness

- *What additional programmatic preparations must the community take in order to successfully complete this initiative? Are new or increased skills or workforce capabilities needed? Are new siting options or regulatory changes needed?*

Equipment/Facility Design Details

- *If major equipment or a new/upgraded facility is required, what conceptual design studies have been completed? Please describe and justify the basic elements of the design.*

Cost Range

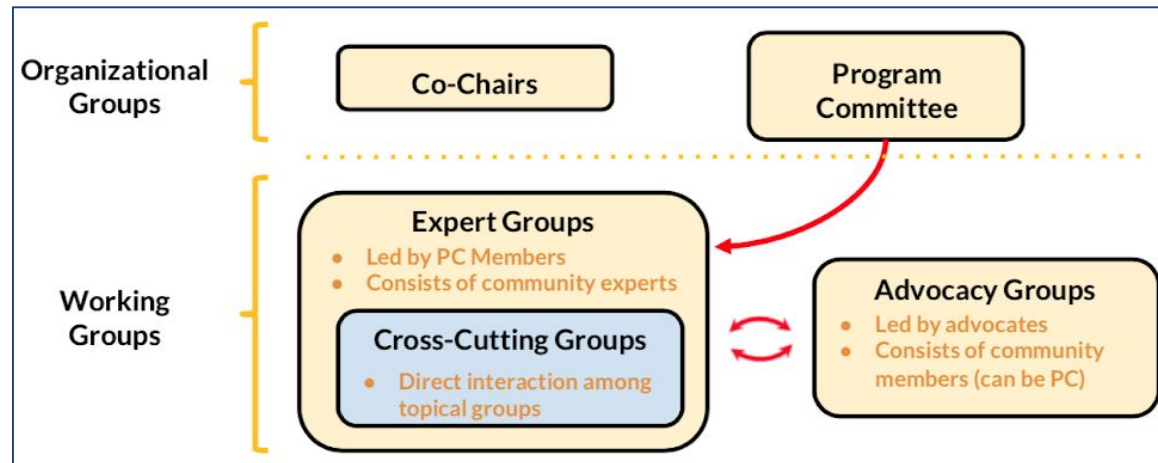
- *Provide an order-of-magnitude estimate for a reasonable cost for achieving the mission scope described above. Include any considerations that went into deriving this estimate, especially design elements that are expected to drive total costs. Design, construction, and operational costs should be included for equipment/facilities.*

Cross-Cutting Connections

- *Please describe any connections between your initiative and the cross-cutting areas: Workforce development, Measurement & Diagnostic, Theory & Computation, Enabling Technology.*

Join Expert Groups

- Expert Groups represent areas in which initiative proposals will be **evaluated** on scientific & technical merit:
 - Extent to which stated goals represent needed scientific or technological progress
 - Technical feasibility & likelihood of achieving goals
 - How the given initiative advances US leadership and relates to the global context
 - Identify and solicit the community to suggest ideas to close remaining research gaps
- Open to entire community with expectation to contribute to evaluations



Magnetic Fusion Energy (MFE) expert groups

- PMI, Boundary and Divertor Plasma Physics
- Transport and Confinement
- Energetic Particles
- Transients
- Scenarios

Fusion Materials & Technology (FM&T) expert groups

- Fusion materials
- Blanket, Tritium, and System issues
- Plasma Material Interaction and Plasma Facing Components