Announcement for community workshops on
Strategic directions for U.S. magnetic fusion research

Workshop 1: July 24-28, 2017 in Madison, WI
Workshop 2: Tentatively December 11-15, 2017 in Austin, TX

I. Overview

This document is an announcement for two magnetic fusion community workshops to enable community presentation and discussion focused on the recent charge to the National Academies of Sciences (NAS), Engineering, and Medicine (http://sites.nationalacademies.org/BPA/BPA_177107). The NAS Committee has been charged to prepare an interim report and a final report focused on the importance of burning plasmas in the future of U.S. fusion energy development, along with consideration of the scientific and engineering challenges and opportunities on the path toward fusion energy, and possible scenarios to achieve that goal. Specifically, the committee will prepare an interim report that will:

I1. Describe and assess the current status of U.S. research that supports burning plasma science, including current and planned participation in international activities, and describe international research activities broadly.

I2. Assess the importance of U.S. burning plasma research to the development of fusion energy as well as to plasma science and other science and engineering disciplines.

The committee will also prepare a final report, building on the interim report, which will:

F1. Consider the scientific and engineering challenges and opportunities associated with advancing magnetic confinement fusion as an energy source, including the scientific and technical developments since the 2004 NAS study on burning plasma research.

F2. In two separate scenarios in which, after 2018, (1) the United States is a partner in ITER, and (2) the United States is not a partner in ITER: provide guidance on a long-term strategic plan (covering the next several decades) for a national program of burning plasma science and technology research which includes supporting capabilities and which may include participation in international activities, given the U.S. strategic interest in realizing economical fusion energy in the long term.

It is anticipated that the U.S. Burning Plasma Organization, the Virtual Laboratory for Technology, and the broader fusion research community within the U.S. combined with previous recent community reports will assist the NAS study in providing information for charge question I1 and for identifying developments since 2004 in charge question F1. The primary purpose of the fusion community workshops is to **foster community discussion** on NAS strategic charge questions I2 and F2 and **identify key opportunities** relevant to charge question F1.

The fusion community workshops have two overarching goals:

1. Provide an open forum to hear community views on strategic charge questions I2 and F2 and opportunities in charge F1, and to provide community feedback on these views.
2. Identify key elements of a long-term U.S. fusion strategic plan (both with and without the U.S as a partner in ITER) including both domestic and international research, and identify points of community consensus on the most critical key elements of that plan.

II. Factors for Assessing Proposed Strategic Elements

Specifically noted in the NAS charge is the assumption that economical fusion energy within the next several decades is a U.S. strategic interest. Further, the NAS committee has been asked to consider several factors in preparing their reports, and therefore the U.S. fusion community workshops should consider these factors in proposing key strategic plan elements:

1. Elements of a strategic plan for U.S. burning plasma research that ensure the U.S. maintains a leadership role in this field.
2. The current level of participation by U.S. scientists in international activities as well as what role international collaboration should play over the next 20 years.
3. The health of domestic fusion research sectors: universities, national labs, and industry
4. How unanticipated events or innovations may necessitate mid-course re-directions

The workshop program committee has also highlighted the importance of identifying scientific and engineering opportunities associated with advancing magnetic confinement fusion as an energy source and therefore includes an additional 5th factor for consideration and assessment:

5. Key scientific and engineering opportunities for advancing magnetic confinement fusion as an energy source

Lastly, in addition to addressing the NAS charge questions and considerations above, it is also recognized that there is significant U.S. fusion community interest in maintaining a strategic vision for fusion that adapts to advances in the field. Thus, the community workshops will also consider ideas on how to foster effective and timely community-based strategic planning for the U.S. fusion program that enhances cooperation with DOE and builds on key strategic elements.

III. Workshop Deliverables

Workshop 1: Building on charge question I2, this workshop will "assess the importance of U.S. burning plasma research to the development of fusion energy as well as to plasma science and other science and engineering disciplines". Key examples of present U.S. burning plasma research importance will be identified, and relative weaknesses and potential growth areas for the U.S. program will also be considered. In response to charge question F1, this workshop will also address broader opportunities for advancing magnetic confinement fusion as an energy source. This workshop will also begin to address charge question F2, but emphasis will be placed on charges I2 and F1.

Brief presentations by the community are requested which (a) assess the importance of U.S. burning plasma research to the development of fusion energy as well as to plasma science and other science and engineering disciplines, (b) propose key strategic elements for the U.S. fusion program, and (c) begin to consider these elements in the context of the whether the US is / is not a partner in ITER. Presentations are requested to explicitly discuss how the proposed strategic elements address the 5 factors listed above.

Major deliverables for Workshop 1 include:

1. An open forum to hear community views on strategic elements, and provide community feedback on these views.
2. A preliminary discussion and documentation led by the workshop program committee of the degree to which community-proposed elements address the 5 factors listed above.
3. Identification of potential points of consensus and also areas in which future discussions would be needed in resolving future directions.

Workshop 2: Building on the generation and discussion of key strategic elements and possible points of consensus from Workshop 1, Workshop 2 will primarily consider proposed key strategic elements in the context of the two scenarios of charge question F2: (1) the United States is a partner in ITER, and (2) the United States is not a partner in ITER.

In addition, the organization and effectiveness of these community workshops will be assessed by the community, and ideas for how to foster more frequent, community-based strategic planning that partners effectively with DOE will be explicitly solicited and discussed.

Major deliverables for Workshop 2 include:

1. An open forum to hear community views on strategic elements, and provide community feedback on these views.
2. Discussion and documentation led by the workshop program committee of proposed strategic elements for scenarios in which the US is / is not a partner in ITER
3. A community assessment of the workshop process and ideas for future workshops
4. A document summarizing the workshop process and high-level outcome

IV. Community Input

Meeting Timing: The first and second NAS meetings incorporating public input are tentatively scheduled to be in May/June and August/September timeframes, respectively - exact dates TBA.

The timing of the first fusion community workshop (July) was chosen to provide input to the second NAS meeting. The timing of the second community workshop (December) was chosen to provide time to assess and incorporate the NAS interim report (due October 31, 2017) in the second workshop discussions and to provide input to a later third and/or fourth NAS meeting.

Input Format: Community input will be solicited in the form of 2 page whitepapers briefly summarizing a proposed strategic element and how this element is impacted by the 5 factors noted in Section II.

A whitepaper template is attached to this announcement, and submission instructions will be made available in the near-term.

Whitepapers will be due 11:59PM Eastern June 26, 2017.

Community input will also be sought in the form of brief presentations at the workshop(s). It is expected the whitepapers will be used by the Program Committee to select and/or consolidate strategic elements or topics for oral presentation.

Website: The workshop website is: https://sites.google.com/site/usmfrstrategicdirections and also here: www.usmfrsd.org

If you have any questions, please contact the meeting co-chairs: David Maurer, Jon Menard, and Mickey Wade: maurer@physics.auburn.edu, jmenard@pppl.gov, wade@fusion.gat.com

V. Workshop Agenda

Workshop agenda(s) will be formulated based on community interest, whitepaper content, and program committee input.

VI. Travel Funding and Registration

These workshops are community-led and not directly sponsored by FES. However, FES has indicated that workshop participants funded by grants, cooperative agreements, and national labs have the discretion to use available funding to travel to the workshops provided that the workshop is related to ongoing work and no contract deliverables are jeopardized by the travel. Workshop attendance should be treated as analogous to attending an annual APS-DPP meeting. It is expected a registration fee will charged to pay for meeting space and logistical support.

VII. Program Committee

Program Committee Membership for U.S. Fusion Community Workshops		
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