

Dear Colleague,

The Department of Energy Office of Fusion Energy Sciences (OFES) is engaging the plasma science community in a request for input for future program planning. This letter is addressed to scientific experts who are advancing the frontiers of plasma science. The OFES chartered Panel on *Plasma Science Frontiers* is planning a series of community-led town hall meetings and workshops to identify: (1) the compelling scientific challenges at the frontiers of plasma science, and (2) the research tools and capabilities that would enable these challenges in frontier science to be pursued in the next decade. The result of these activities will be a report submitted to the OFES that will advise the planning and execution of a strategic vision for the OFES stewardship of plasma science frontier activities. The panel leadership has been tasked (members listed below) with organizing and carrying out the town hall meetings and workshops, and leading the writing of the report commissioned by the OFES.

This letter invites you to submit 2-page white papers (see details below) that will help define the compelling scientific challenges at the frontiers of plasma science. You are also invited to participate in a two-day *Frontiers of Plasma Science Town Hall Meeting*. The meeting will be held in Bethesda Maryland, June 30-July 1, 2015. Details on the *Town Hall Meeting* can be found at <http://www.ornl.gov/plasmawkshps2015> and we hope you can attend. If you are not able to attend, we encourage your participation through the submission of a white paper (details below). We encourage those attending to submit their white papers prior to the town hall meeting so that these ideas can be discussed at the *meeting*.

The *Town Hall Meeting* will host presentations and open discussions of the grand scientific challenges in plasma science and the research required to address these challenges. Presentations at the *Town Hall Meeting* will describe frontier research opportunities, the associated experimental, computational or theoretical research needs, and the societal benefit that may result, that fall within the broad purview of activities supported by the Plasma Science Frontiers (PSF) program in the OFES. This new program is responsible for a wide range plasma physics activities, including general stewardship of the field of plasma physics.

Among the topics included in the *Town Hall Meeting* are: (1) Fundamental Plasma Experiments, (2) Theory and Computation, (3) Astrophysical and Space Plasmas, (4) High Energy Density Plasmas (HEDP) and Warm Dense Matter (WDM), (5) Low Temperature Plasmas, (6) Exploratory Magnetic Confinement, (7) Laser-Plasma Interactions, and (8) Intense charged particle beams. These topics contribute to five crosscutting Workshop Panels:

- Plasma atomic physics and the interface with chemistry and biology
- Turbulence and transport
- Interactions of plasmas and waves
- Plasma self-organization
- Statistical mechanics of plasmas

The Workshop Panels are further described at:

<https://www.ornl.gov/plasmawkshps2015/organization.htm>

The *Town Hall Meeting* will precede two workshops on plasma science frontiers. These workshops comprise the fourth component of the Fusion Energy Sciences Community Planning Workshops (see

[here](#)). The other planning workshops are being held to provide guidance to the OFES in areas related to the ongoing fusion research program. We will not be considering the areas covered by the other three workshops (below):

- *Integrated Modeling for Magnetic Fusion:*
- *Plasma Materials Interactions (PMI)*
- *Tokamak Transients*

White Papers: In preparation for the *Town Hall Meeting* we are requesting two-page white papers (exclusive of references). The white papers should

1. *Describe the research frontier* and importance of the scientific challenge,
2. *Describe the approach* to advancing the frontier and indicate if new research tools or capabilities are required.
3. *Describe the impact* of this research on plasma science and related disciplines and any potential for societal benefit.

The authors of the white paper should indicate:

- (i) Whether an oral presentation is desired
- (ii) Primary and secondary (optional) Workshop Panels most relevant to the research frontier or scientific challenge
- (iii) Corresponding author (with full contact information - name, institution, and email address).

White papers should be submitted in PDF format (see details below) and file size should not exceed 5 MB. Authors may submit or contribute to more than one white paper, however each white paper should be submitted separately and be self-contained. All whitepapers will be posted or linked, for public viewing on the workshop website.

The white papers, presentations and discussions at the *Town Hall Meeting* will comprise one component of the community input into the two Frontiers of Plasma Science Workshops to be held in August and October of this year. As you prepare the white papers, please refer to the description of these workshops at: <<https://www.ora.gov/plasmawkshps2015/background.htm>>.

Deadlines: Please submit your white papers at <<http://www.ora.gov/plasmawkshps2015/whitepapers.htm>> by June 19, 2015 in order to be included in the discussions at the *Town Hall Meeting*. White papers submitted online by July 23, 2015, will enable the white paper to be considered in the first Frontiers of Plasma Science Workshop in August.

Structure of the Town Hall Meeting: The *Town Hall Meeting* will be organized according to research thrusts. The draft agenda is [here](#). The Organizing Committee will use the white papers as input for the selection of speakers and coverage for the *Town Hall Meeting*. Overview speakers, those with 40-minute time slots, will be asked to cover material beyond their personal research interests. The shorter slots may cover more than one white paper, but will be more focused than the broader overview talks. Some contributions may be in the form of short 10-minute presentations. In-person attendance of the *Town Hall Meeting* is strongly preferred for presenters but Remote Participation may be possible. If needed, the *Town Hall Meeting* may be supplemented by subsequent virtual town hall meetings focused on specific areas of research.

We look forward to your participation in this process.

Best Regards

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and the Sub-Panel Chairs:

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