Second UFA Workshop on Burning Plasmas
Experimental Approaches, Issues and Opportunities

Why Are We Here?

R. Parker
Program Committee Chairman

Second UFA Workshop on Burning Plasmas
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Background

- Recognizing the widespread interest in burning plasmas as manifest at the Snowmass meeting, the UFA is sponsoring two Workshops to provide forums for discussing the scientific and technical issues associated with the study of burning plasmas.
- The first Workshop, held at Austin on 11-13 December, 2000 focused on the scientific issues; the present workshop focuses primarily on technical issues, in particular, the experimental approaches that could permit experimental investigation of burning plasmas within a time horizon of about one decade.
- If interest warrants, a third Workshop could be scheduled to examine higher-risk/lower-cost approaches that might become available beyond the one–decade horizon of the present workshop.

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Workshop Objectives

- To identify possible experimental approaches for exploring the science of burning plasmas within a time frame of about 10 years.

- To determine the capability of each approach to explore the burning plasma scientific issues, as identified at Snowmass and in the first Burning Plasma Science Workshop.

- To identify technical and scientific opportunities that could measurably improve the performance, reliability or operational flexibility of burning plasma experiments.

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Workshop Objectives (Cont'd)

- To identify scientific and technical issues related to the projected performance of each approach, specifically:
  - How will particle and power exhaust be handled? How well will proposed components withstand the effects of plasma disruptions and other related "off-normal" operational events?
  - What types of heating and current drive are planned and what are the prospects for investigating "steady-state" plasma operation on the relevant plasma time scales?
  - What is the transport or confinement basis, and the MHD stability basis, for reaching burning regimes and what are the uncertainties in reaching them? What margin exists for physics or hardware performance contingencies?

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Workshop Objectives (Cont'd)

- What physics program is envisioned and how will the burning plasma scientific issues be addressed? Will planned diagnostic capabilities be commensurate with science program needs? Will the pulse rate, number of shots, component lifetime, tritium supply and maintenance requirements be commensurate with the proposed science program?

- What operational and/or hardware flexibility is incorporated into the design? What capability exists for studying burning plasmas in AT regimes? What are the scientific and technology issues involved in such "advanced" operation and how will they be addressed?

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Workshop Output

- Workshop Summary (Parker, 3-5 pages)
- For Each Experimental Approach:

  Design Overview and Physics Program (5-10 pages)

  (JET: Nazikian, IGNITOR: Perkins, ITER: Wesley, FIRE, Navratil)

  Scientific and technical issues (5-10 pages, Breakout Session Co-Chairs)

- Scientific and Technological Opportunities (5-10 pages, Najmabadi, Ruzic)

Authors are requested to provide material to R. Parker (parker@psfc.mit.edu) by 1 June, MS Word or PDF files preferred.