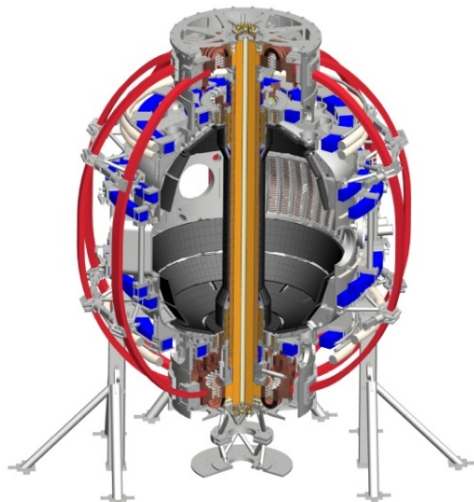


Post-PAC-33 discussion of NSTX-U 5 Year Plan for Pedestal, Scrape-off Layer and Divertor Physics

Coll of Wm & Mary
Columbia U
CompX
General Atomics
FIU
INL
Johns Hopkins U
LANL
LLNL
Lodestar
MIT
Lehigh U
Nova Photonics
Old Dominion
ORNL
PPPL
Princeton U
Purdue U
SNL
Think Tank, Inc.
UC Davis
UC Irvine
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UCSD
U Colorado
U Illinois
U Maryland
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U Tulsa
U Washington
U Wisconsin
X Science LLC

V. A. Soukhanovskii

Post NSTX-U PAC-33 Meeting
PPPL – DCR
February 22, 2013



Culham Sci Ctr
York U
Chubu U
Fukui U
Hiroshima U
Hyogo U
Kyoto U
Kyushu U
Kyushu Tokai U
NIFS
Niigata U
U Tokyo
JAEA
Inst for Nucl Res, Kiev
Ioffe Inst
TRINITI
Chonbuk Natl U
NFRI
KAIST
POSTECH
Seoul Natl U
ASIPP
CIEMAT
FOM Inst DIFFER
ENEA, Frascati
CEA, Cadarache
IPP, Jülich
IPP, Garching
ASCR, Czech Rep

Post-PAC-33 discussion

- What went well
 - ✓ “Planned program puts NSTX-U team in a strong position for boundary, pedestal, SOL and divertor physics research”
 - ✓ “5YP addresses many, but not all of the major issues for ST-FNSF and other future devices”
 - ✓ “NSTX-U capabilities will improve understanding of key ITER issues”

Post-PAC-33 discussion

- PAC recommendations
 - The presentation of plans for boundary physics studies and plasma-material interactions could be compressed (I had told you that!)
 - Divertor physics is difficult to scale to larger devices
 - **Need to address / develop approach**
 - Choice of wall material not within 5YP - how will the SOL/Pedestal change?
 - NSTX-U use of Li evaporation is most likely not a viable method for future devices (continuous operation, Tritium retention)
 - Unclear if turbulence diagnostics cover relevant region and have high enough resolution.
 - Will Li evaporation continue to suppress ELMs at higher P_{loss} ?
 - ELM mitigation techniques could be featured more prominently in 5YP for ITER understanding - may be crucial to understand for FNSF as well.
 - NSTX-U team generally makes strong contribution, but more work is needed in particular with respect to pedestal and SOL turbulence
 - NSTX-U plans to validate cryo-pump modelling within 5YP - provides nice example for code validation.
 - More complete SOL and edge models need to be developed.

Post-PAC-33 discussion

- Thoughts on path forward
 - Compress presentations into 1 or 2?
 - Need to develop PFC strategy and stick to it
 - Amend present BP 5 year plan based on the strategy
 - Significant impact on pedestal and divertor research program if all high-Z PFC coverage implemented within the 5 year plan
 - Need to consider and add an integrated high-Z approach for all chapters
 - Core and pedestal transport
 - Pedestal stability
 - SOL and Divertor
 - Material migration, erosion, etc
 - Need to add FNSF-related motivation to both thrusts