# Status of Chapter 7 of the NSTX-U 5-Year Plan Wave Heating & Current Drive

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*for the NSTX-U Wave Heating and Current Drive Group*

**NSTX-U 5-Year Plan Status Meeting**
**PPPL B318**
**December 5, 2012**

Coll of Wm & Mary
Columbia U
CompX
General Atomics
FIU
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Johns Hopkins U
LANL
LLNL
Lodestar
MIT
Lehigh U
Nova Photonics
ORNL
PPPL
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SNL
Think Tank, Inc.
UC Davis
UC Irvine
UCLA
UCSD
U Colorado
U Illinois
U Maryland
U Rochester
U Tennessee
U Tulsa
U Washington
U Wisconsin
X Science LLC
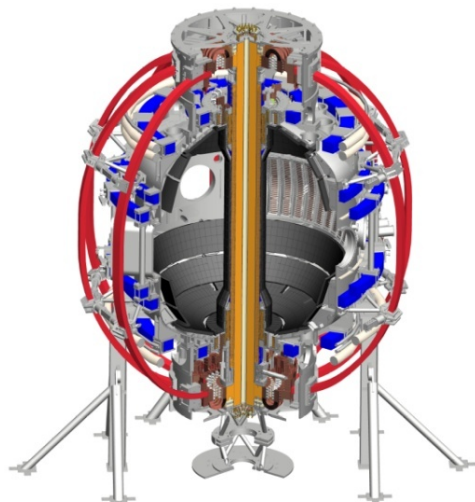
Culham Sci Ctr
York U
Chubu U
Fukui U
Hiroshima U
Hyogo U
Kyoto U
Kyushu U
Kyushu Tokai U
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Niigata U
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Ioffe Inst
TRINITI
Chonbuk Natl U
NFRI
KAIST
POSTECH
Seoul Natl U
ASIPP
CIEMAT
FOM Inst DIFFER
ENEA, Frascati
CEA, Cadarache
IPP, Jülich
IPP, Garching
ASCR, Czech Rep

- Input was received from all co-authors by the end of October

- No outstanding contributions needed from co-authors

- First drafts of all sections have been completed and are available online for review

- Research timelines for baseline and baseline+10% incremental funding have now been included at the end of the chapter

- Need better linkage to other 5-year plan chapters

- Need feedback from management regarding draft chapter text and latest guidance on facility upgrade timeline

# Data Analysis & Simulation Tasks

- Modeled HHFW for $B_T(0)=1$ T NSTX-U TRANSP case 142301G90 with GENRAY, CQL3D, AORSA and TORIC:

  - ➢ Good agreement between GENRAY, CQL3D and AORSA, but TORIC predicts much stronger ion absorption → under investigation

  - ➢ Will model other candidate NSTX-U discharges with range of $B_T(0)$, $I_p$, $T_e$, $T_i$, $n_e$ etc.

  - ➢ Will run GENRAY, TORIC, and AORSA simulations with realistic SOL model and, in the case of AORSA-3D, realistic antenna geometry

- Already modeled 28 GHz ECH for a NSTX $B_T(0)=0.5$ T CHI start-up discharge:

  - ➢ Will simulate 28 GHz ECH and EBW for $B_T(0)=1$ T NSTX-U CHI non-inductive (NI) start-up

  - ➢ While work is progressing on TSC modeling of NSTX-U NI start-up and ramp-up, still need to couple TSC to TRANSP – when will this happen?