NSTX

Supported by

U.S. DEPARTMENT OF ENERGY | Office of Science

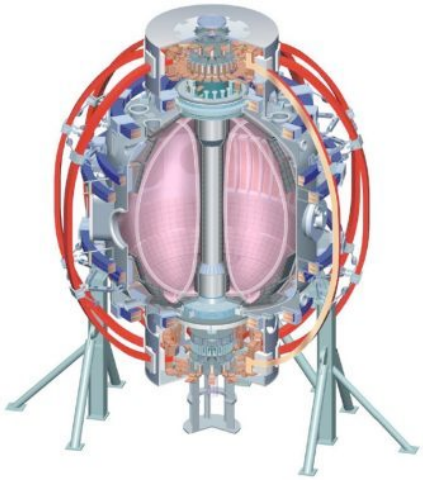
Impact of 3D fields on turbulence, pedestal transport and ELMs

G. McKee, R. Fonck, D. Smith

UW-Madison

2011 NSTX Research Forum
March 15–18, 2011

College W&M
Colorado Sch Mines
Columbia U
CompX
General Atomics
INL
Johns Hopkins U
LANL
LLNL
Lodestar
MIT
Nova Photonics
New York U
Old Dominion U
ORNL
PPPL
PSI
Princeton U
Purdue U
SNL
Think Tank, Inc.
UC Davis
UC Irvine
UCLA
UCSD
U Colorado
U Illinois
U Maryland
U Rochester
U Washington
U Wisconsin



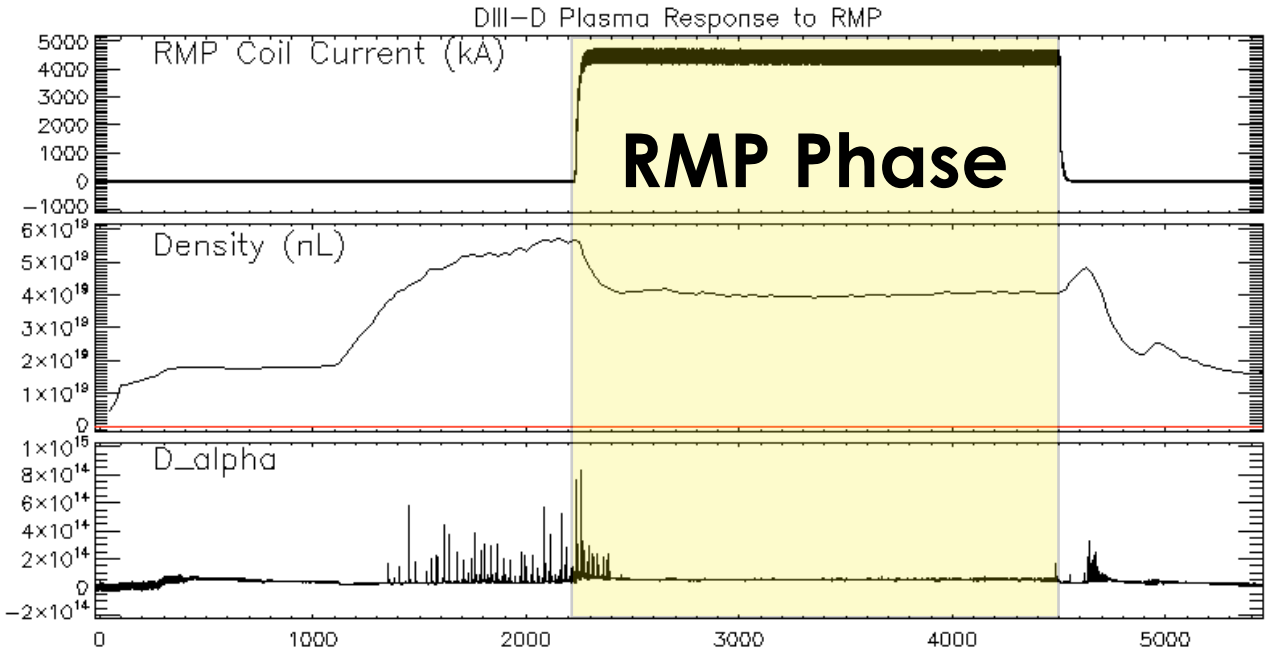
Culham Sci Ctr
U St. Andrews
York U
Chubu U
Fukui U
Hiroshima U
Hyogo U
Kyoto U
Kyushu U
Kyushu Tokai U
NIFS
Niigata U
U Tokyo
JAEA
Hebrew U
Ioffe Inst
RRC Kurchatov Inst
TRINITI
KBSI
KAIST
POSTECH
ASIPP
ENEA, Frascati
CEA, Cadarache
IPP, Jülich
IPP, Garching
ASCR, Czech Rep
U Quebec

Impact of 3D fields on turbulence, pedestal transport and ELMs

- Goal: Quantify the effects of 3D fields on low-k turbulence by applying n=3 fields to H-mode discharges
- Motivation: RMP ELM-suppressed plasmas (DIII-D) exhibit a significant increase in low-k turbulence: may cause increased transport that reduces pedestal gradients & suppresses ELMs
- Scan n=3 NRMP amplitude, apply steady and modulated field, and vary Ip (q_{95}): obtain low-k ñ and velocity fluctuation measurements with BES and other fluctuation diagnostics
- Examine effects on pedestal profiles, ELMs, transport
- Relevant to Milestone R(11-4)

RMP increases turbulence amplitude, changes k-spectrum

Turbulence exhibits fast response to RMP fields
-few ms near edge



ñ Spectral Comparison