Lecture 7:
ITER’s Physics and Technical Issues Today

AP 4990y Seminar
Columbia University
Spring, 2011

Topics:

• 2007 International Design Review
• My personal “issue priority list“:
  ‣ Superconducting magnet assembly and safety
  ‣ Disruptions
  ‣ ELMs
  ‣ NTMs
  ‣ Operational flexibility (for “discovery science”)
  ‣ “Advanced” tokamak operations, RWMs

Tuesday, March 22, 2011
Design Review References


• 2006: Call for issue cards. Establish DR Working Groups.


➡ Ted Strait, ITPA summary at 12th Workshop on MHD Control, Columbia University, Nov 18, 2007

★ Rich Hawryluk, “Principal physics developments evaluated in the ITER design review.”, 22nd IAEA Conference on Fusion, 2008

★ Hideyuki Takatsu, “Summery on ITER, …”, 23rd IAEA Conference on Fusion, 2010
Personal Observations

- Progress in fusion/tokamak research will produce new ideas and uncover new problems.

  **ITER must be flexible to changes/upgrades/exploration of new physics**

- ITER will have technical limitations due to first-of-a-kind novelty, unnoticed manufacturing shortcomings, and management decisions.

  **ITER must be flexible to changes/upgrades/exploration of new physics**

- Discharge planning (with simulations and amazing modeling tools) will be needed to fully-exploit ITER and achieve scientific and technical success.

  **ITER must be flexible to changes/upgrades/exploration of new physics**