Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

**ITER Ion Cyclotron Transmission Line and Tuning System Design Options and Choices** D.W. SWAIN, R.H. GOULDING, D.A. RASMUSSEN, Oak Ridge National Laboratory — The ITER ion cyclotron system is required to deliver 20 MW of power to the plasma for ion heating and for current drive over the 40- to 55-MHz frequency range. An externally tuned antenna module consisting of an array of 24 (4 toroidal x 6 poloidal) current straps is mounted in an equatorial port. The straps are connected (internal to the antenna) in upper and lower poloidal triplets. Eight rf sources are connected to the transmission line and tuning/decoupling system and then to the feeds for the triplets. Two external tuning options that will permit ICH operation with ELMy H-modes are under consideration. In one option, conjugate-T, plasma load resilient, circuits are connected to triplet pairs. The conjugate-T matching components are external to but near the antenna. An alternate design uses a series of combiner-splitters (ELM dumps) to protect the rf sources from reflected power from transient plasma load variations. This talk will describe the design options, evolution of the different designs, and the pros and cons of the options. Future design work and R&D will be needed and will be described. Oak Ridge National Laboratory, managed by UT-Battelle, LLC, for the U.S. Dept. of Energy under contract DE-AC05-00OR22725.

David Rasmussen
Oak Ridge Naional Laboratory

Date submitted: 20 Jul 2007 Electronic form version 1.4