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ITER ICH Transmission Line and Matching System Progress*

D. SWAIN, R. GOULDING, D. RASMUSSEN, Oak Ridge National Laboratory — The ITER Ion Cyclotron Heating (ICH) system is required to deliver 20 MW to the ITER plasma for pulse lengths over 3000 s. The US is responsible for the design and fabrication of the transmission lines and matching system. Significant progress has been made in the design and layout of the system in the past year. The conceptual design has been done by the US and approved by the ITER International Organization (IO), and preliminary design has started. More detailed layouts and analysis of the matching system have been done. A new, more detailed matching system design that uses a 3-dB hybrid coupler and two shorting stubs in a phase-shifter mode is being analyzed. In collaboration with the IO, the layout of the transmission lines and matching system has been detailed. In addition, work has started on control algorithms to do real-time matching and control of the system in response to changing plasma conditions. An R&D program to test prototype concepts and components has been started; recent results and R&D plans will be presented.

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