Abstract Submitted
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**ITER Low-Field-Side-Reflectometer Design Considerations**[1] W.A. PEEBLES, P-A. GOURDAIN, T.L. RHODES, L. ZENG, S. KUBOTA, G. WANG, E.J. DOYLE, UCLA — The ITER environment will be extremely harsh with heat loads and neutron flux levels reaching unprecedented levels. Ensuring the availability, reliability and accuracy of profile monitoring capabilities in ITER represents a major challenge. In contrast to optical-based diagnostics millimeter-wave systems are well-suited to this harsh environment. The first detailed U.S. assessment of the low-field-side reflectometer system is presented. Relativistic effects occur at high temperatures introducing a number of measurement challenges. Large changes in the reflectometry cutoff location occur due to relativistic mass correction, which leads to density profile measurement in ITER becoming dependent on knowledge of the local electron temperature. Furthermore, cutoff contours can become hollow and electron cyclotron absorption increases. These effects restrict core access and significantly modify wave propagation in the core plasma. The impact of these issues on reflectometry measurement capabilities is described and potential solutions discussed.

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