Abstract Submitted
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**Study of Doppler Backscattering for Plasma Rotation Measurements on ITER**[1] T.L. RHODES, S. KUBOTA, W.A. PEEBLES, L. SCHMITZ, L. ZENG, E.J. DOYLE, G. WANG, University of California-Los Angeles — Millimeter-wave based diagnostic systems are well suited to the harsh environment expected in ITER and other future burning plasmas. One such technique, Doppler reflectometry, has been proposed for plasma rotation measurements on ITER. In this technique radiation is injected at an angle with respect to the plasma edge and the Doppler shift of the density fluctuations monitored. This shift depends upon both the background ExB velocity as well as the intrinsic propagation velocity of the fluctuations. The physics of Doppler backscattering and its specific application to ITER are studied using full wave 2D simulations for ITER scenarios. Near the cutoff layer a long wavelength electric field pattern is formed roughly parallel to the flux surface. It is this field pattern that interacts strongly with the density fluctuations propagating in the poloidal direction, i.e. within the flux surface. Data from the DIII-D tokamak as well as the limitations and potential of this method for ITER will be presented and discussed.

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