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Electric Fields near RF Heating and Current Drive Antennas in Tore Supra Measured with Dynamic Stark Effect Spectroscopy* C.C. KLEPPER, ORNL, E.H. MARTIN, ORNL/NCSU, R.C. ISLER, ORNL, L. COLAS, J. HILLAIRET, CEA-IRFM, Y. MARANDET, CNRS/Univ-Provence, PH. LOTTE, G. COLLEDANI, V. MARTIN, CEA-IRFM, D.L. HILLIS, J.H. HARRIS, ORNL, B. SAOUTIC, CEA-IRFM — Computational models of the interaction between RF waves and the scrape-off layer plasma near ion cyclotron resonant heating (ICRH) and lower hybrid current drive launch antennas are continuously improving. These models mainly predict the RF electric fields produced in the SOL and, therefore, the best measurement for verification of these models would be a direct measurement of these electric fields. Both types of launch antennas are used on Tore Supra and are designed for high power (up to 4MW/antenna) and long pulse (>>25s) operation. Direct, non-intrusive measurement of the RF electric fields in the vicinity of these structures is achieved by fitting spectral profiles of deuterium Balmer-alpha and Balmer-beta to a model that includes the dynamic, external-field Stark effect, as well as Zeeman splitting and Doppler broadening mechanisms. The measurements are compared to the mentioned, near-field region, RF antenna models.
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Elijah Martin
ORNL/NCSU

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