

Abstract Submitted
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Beam-emission spectra in high field, high density plasmas of the Alcator C-Mod tokamak¹ I.O. BESPAMYATNOV, Institute for Fusion Studies, The University of Texas at Austin, O. MARCHUK, Institute of Energy and Climate Research, Forschungszentrum Julich, K.T. LIAO, W.L. ROWAN, Institute for Fusion Studies, The University of Texas at Austin, Y. RALCHENKO, NIST, R.T. MUMGAARD, MIT PSFC, S.D. SCOTT, PPPL, R.S. GRANETZ, MIT PSFC — Measurements of relative line intensities within the H-alpha Stark multiplet emitted by a neutral beam have consistently defied predictive attempts. This has impact on impurity density measurements via CXRS and current profile measurements via MSE. New measurements for the relative line intensities on Alcator C-Mod are motivated by new predictions which challenge and replace the usual assumption of statistical distribution among Stark states. The predictions are based on a collisional-radiative model (NOMAD) where magnetic sublevels are described in a parabolic basis, and new proton excitation cross sections are calculated. This model proved to be essential to explain the well-known difference between measured and predicted spectra on JET. C-Mod has the unique ability to cover parameters which test the statistical distribution assumption over the range accessed in contemporary experiments and in ITER. Here we focus on comparison of predictions with measured beam spectra for a selection of C-Mod plasmas.

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