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A Reduced Model for Predicting Fast-ion D_α Light in Tokamaks,* L. Stagner, W.W. Heidbrink, *UC Irvine*; B. Grierson, *PPPL* — The fast-ion D_α (FIDA) diagnostic measures visible photons emitted when energetic deuterium ions undergo charge-exchange reactions with an injected neutral beam [1]. The Doppler shift of the light contains useful information about the fast-ion population but the signal also depends upon many other quantities. A sophisticated forward-modeling code [2] treats all of the relevant atomic physics but there is a need for an approximate code that predicts expected FIDA spectra. This rapid code will be used to remove the FIDA contribution to main-ion D_α spectra, for data mining, and to guide the execution of experiments. Comparisons of simplified models with full calculations are described.

[1] W.W. Heidbrink *et al.*, Pl. Phys. Cont. Fusion **46** (2004) 1855.
[2] W.W. Heidbrink *et al.,* Comm. Comp. Phys. (2010) submitted.

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