

Abstract Submitted
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Improvements to a Fast-ion D_α Simulation Code¹ Y. LUO, Tri Alpha Energy, W. HEIDBRINK, E. RUSKOV, UC Irvine, D. LIU, UW Madison, M. GARCÍA-MUÑOZ, B. GEIGER, IPP Garching, R. AKERS, C. MICHAEL, CCFE — FIDASIM is a code that models fast-ion D_α (FIDA) light that is produced by charge-exchange reactions between fast ions and injected neutral beams in tokamak plasmas. Reactions with both the primary injected neutrals and with the cloud of secondary “halo” neutrals that surround the beam are treated. Accurate calculation of the fraction of neutrals that occupy excited atomic states (the collisional-radiative transition equations) is an important element of the code. Judicious selection of grid size and other parameters facilitate efficient solutions. D_α light from beam emission, direct charge-exchange with protons, and the beam halo are also calculated. For greater speed, conversions to FORTRAN and GPU are underway. FIDASIM has been applied to data from DIII-D, NSTX, ASDEX Upgrade, and MAST.

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