

Abstract Submitted
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Midplane Neutral Density Profiles in NSTX¹ D.P. STOTLER, PPPL, F. SCOTTI, LLNL, R.E. BELL, B.P. LEBLANC, PPPL, R. RAMAN, U.Wash. — A procedure for using the DEGAS 2 Monte Carlo neutral transport code to infer neutral density profiles from the Balmer- β emission data recorded by a tangential camera was proposed previously and is examined in more detail here. The simulations track the penetration of an ad hoc neutral gas source at the vacuum vessel wall; the associated light emission seen by the camera is obtained via a synthetic diagnostic. The resulting radial emission profiles compare well with the measured ones, with the ratio of the profile peaks providing scaling factors for the neutral source strength and all output quantities. The procedure yields absolute radial profiles of deuterium atoms and molecules at the NSTX midplane. We will first show that the modeled camera image and density profiles are insensitive to variations in the spatial distribution of the neutral source. The procedure will then be applied to data from a variety of different NSTX operating regimes. A detailed uncertainty and error analysis will also be presented.

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