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Comparisons of Measured Gas Puff Emissions with DEGAS 2 Modeling of Alcator C-Mod Plasmas[1] S. G. BAEK, J. TERRY, MIT PSFC, D. S. STOTLER, PPPL, D. BRUNNER, B. L. LABOMBARD, MIT PSFC —
Characterizing neutral particle transport in a tokamak and validating an available model against experimental measurements provide important predictive capabilities on neutral particle dynamics. On Alcator C-Mod, the gas-puff imaging system is useful in performing this validation study because both the gas puff rate and two systems detecting the light emission from the puff have been absolutely calibrated. This enables direct comparisons of the spatial distributions and absolute brightness with the synthetic diagnostic results from the Monte Carlo neutral transport code, DEGAS 2. An initial comparison between the gas puff imaging of a Helium-I line measured in a well-diagnosed L-mode plasma and the DEGAS 2 modeling of that puff has been performed. This result shows that the brightness profile shape generally agrees well with a small radial shift. While the simulation predicts a higher brightness, the peak brightness is also found to be in agreement within a factor of two. Based on this encouraging result, new experiments covering a wide range of density were conducted for He puffs and will be compared with DEGAS 2 simulations. A comparison of D_alpha emission from a D2 puff with DEGAS 2 modeling will also be presented.

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