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Neutral Particle Transport in Field Reversed Configurations ALES NECAS, DANIEL BARNES, SEAN DETTRICK, DEEPAK GUPTA, Tri Alpha Energy, TAE TEAM — As far as we know, there has been no study on the neutral particle transport in the Field Reversed Configurations (FRC). The presence of neutral gas impacts, e.g., the charge-exchange (cx) of the energetic ion population. In this work we will present three computational tools to study the neutral particle transport in an FRC: In the first approach we couple an MHD code with a neutral fluid– Lamy Ridge –, in the second approach we apply the modified Monte Carlo particle code – DEGAS2 – to study the neutral transport in a pseudo-equilibria, and the third approach uses the GTNEUT and GTNEUT-upgrade codes, which are based on the calculation of transmission and escape probabilities and balancing fluxes with a pseudo-equilibrium. A good agreement between DEGAS2 and GTNEUT and GTNEUT-upgrade has been made. Separately, we will present a reasonable agreement between DEGAS2 and Lamy Ridge. In addition, using DEGAS2 we show the neutral density profiles of atomic and molecular deuterium, as well as Dα profiles and its comparison to the experimental results.

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