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Investigation of Edge Pedestal Profiles in DIII-D¹ W.M. STACEY, Georgia Tech, R.J. GROEBNER, General Atomics — We have previously found [1,2] that, when experimental profiles of E_r and V_{θ} and average values of momentum and heat transfer coefficients inferred from experiment were used as input, the radial profiles of n, T_i and T_e in the edge pedestal could be calculated directly from particle, momentum and energy balance requirements. The pedestal structure (localized steep gradient region) was found to result from a combination of an edge peaking in the ion outward V_r caused by the ionization of recycling neutrals and a strong edge peaking in the inward ion V_{pinch} caused by strong edge peaking in E_r and V_{θ} . There is theoretical evidence that the peaking in E_r and V_{θ} may be caused by the peaking in V_r , suggesting the ionization of recycling neutrals as the ultimate cause of the edge pedestal structure. We are carrying out further calculations and examinations of the data to investigate this possibility.

[1] W. M. Stacey, Phys. Plasmas, **11**, 5487 (2004).

[2] W. M. Stacey and R. J. Groebner, Phys. Plasmas, 12, 042504 (2005).

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