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Neutral effects on magnetized collisional plasma transport¹ AN-DREI N. SIMAKOV, Los Alamos National Laboratory — Neutral particles present at the edge of plasma magnetic confinement devices can play an important role in plasma energy and momentum transport due to a strong coupling with the plasma ions through charge-exchange processes [1–5]. Specifically, neutral fractions of order one thousandth or less are sufficient to produce important corrections to neoclassical radial ion heat flux, parallel ion flow, and the radial electric field, at least in a collisional plasma. Such corrections were evaluated in Refs. [2–5]. However, no complete, self-consistent, drift-ordered fluid description for a partially-ionized collisional plasma was available when these results were obtained. We recently obtained such a description [6] and use it in this work to check the results of Refs. [2–5]. In particular, we evaluate neutral corrections to the Pfirsch-Schlüter radial electric field in a fully-ionized plasma [7]. [1] R.D. Hazeltine *et al.*, Nucl. Fusion **32**, 3 (1992). [2] P.J. Catto *et al.*, Phys. Plasmas **5**, 3961 (1998). [3] T. Fülöp *et al.*, Phys. Plasmas **5**, 3969 (1998). [4] T. Fülöp *et al.*, Phys. Rev. Lett. **89**, 225003 (2002). [5] A.N. Simakov *et al.*, Phys. Plasmas **10**, 398 (2003). [6] A.N. Simakov, Plasma Phys. Control. Fusion, submitted. [7] P.J. Catto *et al.*, Phys. Plasmas **12**, 012501 (2005).

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