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Effect of Self-consistent Poloidal Electric Field on Neoclassical Angular Momentum Transport* S.K. Wong, *SD Mesa College*, V.S. Chan, *GA* — Existing calculations of toroidal angular momentum flux in the banana regime of neoclassical transport theory have neglected the self-consistent electric field, or the poloidal variation of the electric potential, that arises from quasi-neutrality. Recently, it has been shown that this variation cannot be neglected in the Pfirsch-Schluter regime, where it in fact gives the dominant contribution for large aspect ratio flux surfaces. We show that the same conclusion applies in the banana regime. We have revisited the calculation of this variation in the banana regime, and found an analytic expression that does not have the divergence at the inner most point of the flux surface noted in an earlier work, although it is still discontinuous there. Using this expression, and an analytic solution of the linearized drift kinetic equation based on a model collision operator, we have obtained a closed form for the angular momentum flux to leading order of an expansion in inverse aspect ratio. The result is larger than the existing one by the order of square root of inverse aspect ratio.

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