

Abstract Submitted
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Relating parallel and perpendicular flows in a magnetized toroidal plasma ABINADAB DIETER, RICHARD HAZELTINE, Institute for Fusion Studies — We present a general relationship between the transport of heat and particles across flux surfaces predicted by neoclassical theory and the parallel flows within those flux surfaces. We make no assumptions regarding collisionality, obtaining results valid in all collisionality regimes. Our results are constructed using variational solutions to Spitzer problems with appropriate source terms. While these Spitzer functions are particularly relevant to analysis of high collisionality regimes, here they are simply mathematical tools. We compare our results to previous work specific to the collision dominated Pfirsch-Schlüter regime¹ and to low collisionality ion transport.²

¹Hinton, F.L., and R.D. Hazeltine, 1976, Reviews of Modern Physics, 48, 239

²Dieter, A., and R.D. Hazeltine, 2004, Physics of Plasmas

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