Integral parallel closures for various ions[1] JEONG-YOUNG JI, HAN-KYU LEE, ERIC HELD, Utah State University — Ion parallel closures for heat flow and viscosity are expressed as kernel-weighted integrals of temperature and flow-velocity gradients. Due to the ion-electron collisions, the closures depend on the ion charge number and ion-electron temperature and mass ratios. Simple, fitted kernel functions are obtained for arbitrary collisionality from the 1600 moment solution and the asymptotic behavior in the collisionless limit. The fitted parameters are presented for hydrogen and helium isotopes with various temperature ratios. A generalization to arbitrary ions is discussed.

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