

Abstract Submitted
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Collisionless Closure¹ P.J. MORRISON, University of Texas at Austin, C.S. JONES, LANL — In practice, various fluid equations are derived from kinetic theories by various procedures involving the taking of velocity moments and then expanding in terms of small parameters such as the Knudsen number. Usually such expansions, like the Hilbert and Chapman-Enskog procedures for the Boltzmann equation, assume the collision term of the kinetic theory is dominant. We describe what appears to be a novel closure procedure in the opposite limit where collisions are negligible. Sets of closed fluid equations are obtained in this limit. The procedure is general and the equations obtained can be generalized to include electromagnetic forces, which are necessary for e.g. a fluid description of a plasma.

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