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Pressure and Density Scaling in the High-Energy Trapping Distribution During Reconnection PETER MONTAG, Massachusetts Institute of Technology, JAN EGEDAL, University of Wisconsin-Madison — The trapping distribution is a model of the electron distribution function that posits two regions of velocity space: a "passing" particle region where electrons are fed in from an external Maxwellian distribution and a "trapped" particle region with Maxwellian distribution in perpendicular velocity and uniform distribution in parallel velocity. The boundary between trapped and passing is determined by the parallel electric field and the magnetic mirror force. This has proven a simple but accurate model of the electron distribution function in the inflow region during reconnection, and the simplicity of this model allows for analytic calculation of the moments. The results of this calculation can be used to determine asymptotic forms of the scaling laws of the plasma parameters. Additionally, the model can be straightforwardly extended to the relativistic limit, and reasonably accurate approximations to the scaling laws in that limit are also obtained.

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