Shocks and discontinuities in the Hall-MHD model[1] ELIEZER
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There are a number of papers already published in the literature which present fundamentally incorrect results on shocks and other discontinuities possible within the
Hall-MHD model. The basic mistake is that the previous works assume that the
jump conditions across a discontinuity must be local, connecting values of the field
in the same location on both sides of the discontinuity. But this is incorrect. For
example, "massless" electrons can travel along the discontinuity surface at "infinite"
speed, enter the surface in one location and exit at another. We work out the shock-structure problem and present other explicit examples for the rather small number
of discontinuities allowed within this model. As the shock strength diminishes, we
show that the results converge to our recently dereived [1] dispersion relations of
Hall-MHD waves. [1] E. Hameiri, A. Ishizawa, and A. Ishida, Phys. Plasmas **12,**
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