

The Parker Challenge

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Recently Parker [1] suggested that it would be useful to organize a debate concerning the best way to construct a magnetohydrodynamic- (MHD-) based understanding of plasma physics. This is a contribution toward that goal. Its focus is the logical organization of an alternative to usual formulations that emphasize the electric fields and currents as the controlling elements. Here the emphasis is placed on the magnetic fields and plasma velocity. Galilean and relativistic transformations are employed in order to assure that the physics of the flow is strictly Newtonian. The approach here is different from that of Parker [2], but the conclusions are identical. We agree from our different viewpoints that the usual formulation of the MHD model can be seriously misleading.