

The Modified Magnetohydrodynamical Equations

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Abstract: After finding the really self-consistent electromagnetic equations for a plasma, we proceed in a similar fashion to find how the magnetohydrodynamical equations have to be modified accordingly. Substantially this is done by replacing the " Lorentz" force equation by the correct (in our case) force equation. Formally we have to use the vector potential instead of the magnetic field intensity. The appearance of the formulae presented is the one of classical vector analysis. We thus find a set of eight equations in eight unknowns, as previously known concerning the traditional MHD equations.

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Key words: electrodynamics, plasmas, one-fluid approximation,
magnetohydrodynamics, self-consistency

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