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			authors	<ul style="list-style-type: none"><li>Elham Nazari</li><li>Mahmood Roshan</li></ul>	DUPLICATES	993
	authors	<ul style="list-style-type: none"><li>Jai-chan Hwang</li><li>Hyerim Noh</li></ul>	title	Post-Newtonian magnetohydrodynamics		
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	abstract	Using the fully nonlinear and exact perturbation formulation with magnetohydrodynamics (MHD) in Minkowski background we derive first-order post-Newtonian (1PN) equations without imposing the slicing (temporal gauge) condition. The 1PN MHD formulation is complementary to our recently presented fully relativistic MHD combined with 0PN gravity available only in the maximal slicing. We present the 1PN MHD equations in two gauge conditions previously used in the literature and provide gauge transformation relations between different gauges. We derive the PN effects on MHD waves in a static homogeneous medium.	abstract	In this paper, we derive the post-Newtonian equations of the ideal Magnetohydrodynamics. To do so, we use the modern approach to post-Newtonian theory, where the harmonic gauge is used instead of the standard post-Newtonian gauge, and find the post-Newtonian metric in the presence of the electromagnetic fields. We show that although the electric field does not contribute in the metric and curvature of the spacetime, the magnetic field appears in the time-time component of the metric. The appearance of the magnetic field, in principle, leads to new relativistic contributions to the magnetohydrodynamic governing equations. Therefore, using the post-Newtonian metric, we find the relativistic corrections to the magnetohydrodynamic equations up to the first post-Newtonian order. In addition, as usage of this derivation, we obtain a complete set of equations by which the behavior of a self-gravitating plasma can be determined in post-Newtonian gravity.		
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