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	authors	• S. Rosswog • D.J. Price	**authors**	• Rosswog, S. • Price, D.	DUPLICATES	1103
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	abstract	We describe a new method to include magnetic fields into smooth particle hydrodynamics. The derivation of the self-gravitating hydrodynamics equations from a variational principle is discussed in some detail. The non-dissipative magnetic field evolution is instantiated by advecting so-called Euler potentials. This approach enforces the crucial $\nabla \cdot B = 0$-constraint by construction. These recent developments are implemented in our three-dimensional, self-gravitating magnetohydrodynamics code MAGMA. A suite of tests is presented that demonstrates the superiority of this new approach in comparison to previous implementations.	**abstract**			
	versions		**versions**			