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Yong Li and **Catalin Trenchea*** (trenchea@pitt.edu), 301 Thackeray Hall, University of Pittsburgh, Mathematics, Pittsburgh, PA 15260. *Partitioned two-step second-order method for magnetohydrodynamics in Elsässer variables*. Preliminary report.

In this address we propose a partitioned, two step, second-order method for magnetohydrodynamics in Elsässer variables, which treats implicitly the subproblem terms and explicitly the coupling terms. The stability analysis shows that the method is unconditionally stable for the magnetic Prandtl number in the interval $(0.5, 2)$. In a large number of laboratory simulations, the magnetic Prandtl number is taken to be unity. The algorithm is shown to be long-time stable, and the finite element error analysis is presented with a numerical test supporting the theory. (Received January 20, 2015)