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The Hydra Magnetohydrodynamics Package[1] J.M. KONING, G.D. KERBEL, M.M. MARINAK, LLNL — The Magnetohydrodynamics package of the ALE radiation-hydrodynamics code Hydra is being extended to model the magnetic field and its effect on temperature for ICF targets. The current package capabilities include a fully three-dimensional resistive MHD package in the small Hall limit. An operator split method is used to couple the MHD to the hydrodynamics and is fully implicit in time and second order accurate in space. A three-dimensional vector finite element method is utilized to define a set of spaces and differential operators that maintain the zero divergence of the magnetic field exactly. The Hydra MHD package has been improved by the addition of an exact circuit solution method that enables the potential for multiple circuits. A significant enhancement of Hydra is the addition of a Python interpreter embedded in the code. The Python interpreter allows users to make full use of Python's features in parallel with full access to the parameters and variables in the simulation. Examples of the Python interpreter used with MHD package and Hydra in general will be presented.

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