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ICF calculations with incorporation of an exact Riemann solver into the RAGE hydrodynamics algorithm J.G. WOHLBIER, CCS-2, Los Alamos National Laboratory, J.H. COOLEY, X-2, LANL, J.W. GROVE, CCS-2, LANL, E.D. DENDY, CCS-2, LANL — Successful calculations of inertial confinement fusion implosions depend critically on the use of an accurate and well behaved hydrodynamics algorithm. Extensive use of the RAGE code [1] is expected in ICF applications, especially for future NIF calculations. We have implemented an exact Riemann solver [2] together with a MUSCL-Hancock time centering [3] in the RAGE code hydro algorithm. In this paper we compare results for representative ICF calculations before and after the inclusion of the modifications. We compare, for example, the generation of grid-seeded instabilities and computed values of shock speeds as a function of grid refinement. [1] R.M. Baltrusaitis *et al.*, *Phys. Fluids* **8** (9), 2471–2483 (1996). [2] P. Colella and H. Glaz, *J. Comput. Phys.*, vol. 59, pp. 264–289, 1985. [3] B. van Leer, *16th AIAA Comp. Fluid Dynamics Conf.*, AIAA 2003-3559.

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