Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Two Dimensional Computer Modeling of Plasmas Using Adaptive Mesh Refinement MARK BERRILL, JORGE ROCCA, Colorado State University, NSF ERC FOR EXTREME ULTRAVIOLET SCIENCE AND TECHNOLOGY TEAM — An understanding of the physics of laser-created plasma which is important for a wide range of applications often requires a detailed modeling of multi-dimensional effects. We report on a new 2D hydrodynamic plasma model to simulate laser created plasmas. The computer model simulates the plasma by solving the hydrodynamic equations with an atomic model. The equations are discretized on a rectangular Eulerian grid using adaptive mesh refinement (AMR). Multiple levels of refinement with an automatic grid generation allows for accurate simulations while minimizing the run time. The model is capable of running on high performance computers. The current capabilities of the model will be discussed and results of simulations performed to model plasma-based table-top soft x-ray lasers. Work supported by the NSF EUV ERC Award #EEC-0310717 and the NNSA SSAA program through DOE Grant #DE-FG52-060NA26152. M.B. was support by DOE CSGF Grant #DE-FG02-97E.

Mark Berrill
Colorado State University

Date submitted: 21 Jul 2009 Electronic form version 1.4