1056-65-1418 **Sean Cohen*** (secohen@ncsu.edu), Department of Mathematics, SAS Hall, 2311 Stinson Drive, Raleigh, NC 27695-8205, and **Alina Chertock**, **V. A. Trofimov** and **I. A. Shirokov**.

Computing Laser Ablation by a Finite-Volume Method.

In this paper we consider the computation of laser ablation as presented in (Kuzyakov, Trofimov, Shirokov, Technical Physics, 2008). In laser ablation, a laser pulse strikes a solid material thereby causing fast evaporation of the target material. Efficient computation is important since the physical experiments are difficult to implement. The computation of laser ablation presents difficulties to numerical schemes. In the spatial domain, shocks are present. Finite difference schemes require an extremely large spatial domain to accurately resolve shocks. Explicit ODE solvers, such as the forward Euler method, require a time step of order $(\Delta x)^2$. The result is a high numerical cost, even for the 1-D problem. It is prohibitive when computing 2-D problems. In this paper, we apply a high-resolution finite-volume method to the problem. The method used is the central-upwind scheme developed in (Kurganov, Tadmor, Journal of Computational Physics, 2000). The scheme is able to produce the results at extensive computational savings while accurately resolving the shocks. (Received September 21, 2009)