**PARALLELIZABLE ALGORITHMS FOR DESCRIBING THE EFFECTS OF STRONG TIME-DEPENDENT ELECTROMAGNETIC FIELDS ON THE HYDROGEN ATOM**

John Emmons†, Austin Howes†, Alex Kramer†

Xiaoxu Gaun†, Klaus Bartschat†, Jason Grout‡, Grum-Grzhimailo\*

†Institute of Nuclear Physics, Moscow State University

‡Department of Physics and Astronomy, Drake University

\*Department of Mathematics and Computer Science, Drake University

We are testing a variety of methods to numerically treat the ionization of atomic hydrogen by a strong laser pulse. Besides providing high accuracy, the algorithms should be parallelizable in order to handle the sometimes long propagation times needed to solve the time-dependent Schrödinger equation for this fundamental strong-field problem. We report progress on developing a computer code that will make such calculations possible on massively parallel supercomputer platforms.