Abstract Submitted
for the GEC12 Meeting of
The American Physical Society

Nonperturbative B-Spline R-Matrix with Pseudostates Calculations for Electron Impact Ionization of Helium[1] OLEG ZATSARINNY, KLAUS BARTSCHAT, Drake University — The theoretical and numerical approach used in a recent publication [1] describing a nonperturbative treatment of ionization and simultaneous ionization plus excitation of helium by electron impact will be discussed. We then present a variety of comparisons between the present predictions, experimental data, and results from other nonperturbative theories, such as convergent close-coupling and time-dependent close-coupling, for ionization without excitation. The overall excellent agreement with the other available data provides confidence in using the B-spline R-matrix with pseudostates approach for this benchmark system, as well as extending it to more complex situations for which no other nonperturbative methods are currently available.

[1] O. Zatsarinny and K. Bartschat, Phys. Rev. Lett. **107** (2011) 023203.

[1]Work supported by the United States National Science Foundation under PHY-0903818 and PHY-1068140, and by the TeraGrid/XSEDE allocation TG-PHY090031.

Klaus Bartschat
Drake University

Date submitted: 14 Jun 2012 Electronic form version 1.4