Theoretical Atomic and Molecular Physics and Data Activities for Astrophysics

D.R. Schultz, P.C. Stancil, P.S. Krstić, W. Liu, and D.J. Jeffery
Physics Division, Oak Ridge National Laboratory

The atomic astrophysics group at ORNL produces, collects, evaluates, and disseminates atomic and molecular data relevant to astrophysics, and actively models various astrophysical environments utilizing this information. With the advent of the widespread use of the World Wide Web, these data are also being placed on-line to facilitate their use by end-users in various applications communities. The group's recent activities in data production and modeling will be highlighted in this presentation. For example, recent calculations and applications of elastic scattering and derived transport cross sections for ionospheric studies, charge transfer between metal ions and metal atoms for supernova nebular spectral modeling, ion-atom collision data relevant to planetary atmospheres and comets, and data for early universe modeling will be described.