Abstract Submitted
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Large Scale Monte Carlo Simulations of Non-Maxwellian Collisions in Rydberg Plasmas[1] D. VRINCEANU, Texas Southern University, Houston TX 77004, R. ONOFRIO, Dipartimento di Fisica e Astronomia Galileo Galilei, Universit di Padova, Italy, H. R. SADEGHPOUR, ITAMP, Harvard-Smithsonian Center for Astrophysics, Cambridge MA 02138 — While a Maxwell-Boltzmann (MB) energy distribution for the charged particles in a plasma is customarily assumed, more general κ-distributions have been proposed as generalizations that apply for non-equilibrium space plasma physics, and other special situations. Specific to these distributions is the substantial power-like high-energy tail. The effects of these deviations from MB distribution on the rate of collisional rates are investigated by using large scale Classical Trajectory Monte Carlo simulations for electron-Rydberg processes. A novel methodology for running simulations in parallel uses Redis, the same in-memory database that is behind the powerful Tweeter engine. The computational results are compared with analytical results.

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