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Ionization in collisions between metastable hydrogen atoms[1]
ALEX BOHR, ANDREW BLICKLE, STEPHEN PAOLINI, LUKE OHLINGER, ROBERT FORREY, Penn State University, Berks Campus — Associative and Penning ionization cross sections are calculated for collisions between metastable hydrogen 2s atoms at thermal energies. Cross sections for deuterium 2s collisions are also reported. The associative ionization cross sections behave as E^{-1} for collision energy E, in agreement with an existing experiment. The Penning ionization cross sections dominate for all energies and are found to follow the $E^{-2/3}$ behavior that was predicted in previous work for the total ionization cross section. The magnitudes of our theoretical associative ionization cross sections for H(2s)+H(2s) collisions are between two and four times larger than the experimental data.

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