RELATIVISTIC RECOIL: A STUDY OF HIGHLY IONIZED ATOMS

Abstract

by

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Recoil corrections, contributions to the energies of atoms and ions that are inversely proportional to the mass of the nucleus, are treated using a three-dimensional form of the Bethe-Salpeter equation for hydrogenic ions. All states with principal quantum numbers $n = 1$, 2 and 3 are treated. The importance of these calculations for the interpretation of a number of high accuracy experiments on highly charged ions is shown, and directions for future research involving mass-polarization, a many-electron recoil correction, are discussed.