

High Energy Physics - Phenomenology

Atomic Ionization by keV-scale Pseudoscalar Dark Matter Particles

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Using the relativistic Hartree-Fock approximation, we calculate the rates of atomic ionization by absorption of pseudoscalar particles in the mass range from 10 to ~ 50 keV. We present numerical results for atoms relevant for the direct dark matter searches (e.g. Ar, Ge, I and Xe), as well as the analytical formula which fits numerical calculations with few per cent accuracy and may be used for multi-electron atoms, molecules and condensed matter systems.

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