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POS-4 Relativistic corrections to nonrelativistic electric dipole transitions in heliumlike atoms

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Radiative transition probabilities in atoms are normally calculated from nonrelativistic wave functions and the electric dipole transition operator. The theory of relativistic corrections to nonrelativistic energies is well established in terms of the Breit interaction, but the same is not true for relativistic corrections to transition probabilities. Our objectives are first, to start from operators derived from quantum electrodynamics for the lowest-order relativistic corrections and verify that they yield the same results as from solutions to the Dirac equation for the case of hydrogen. And second, apply the same operators (including two-electron corrections) to the case of electric dipole transitions in heliumlike ions. In both cases, relativistic corrections become increasingly important with increasing nuclear charge.

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