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Oscillator strengths for spin-changing S - P transitions in He[1]
DONALD C. MORTON, Herzberg Institute of Astrophysics, QIXUE WU, G.W.F. DRAKE, University of Windsor — Following earlier work [1], we have calculated electric dipole (E1) and magnetic quadrupole (M2) oscillator strengths and spontaneous decay rates for 24 spin-changing transitions in atomic helium. The transitions are $n\ ^1\mathrm{S}_0 - n'\ ^3\mathrm{P}_{1,2}$ and $n\ ^3\mathrm{S}_1 - n'\ ^1\mathrm{P}_1$ with $n, n' \leq 3$ or $n \leq 10$ for $n' = n$. The E1 calculations include the relativistic corrections obtained with the Breit operators summed over intermediate states for both infinite nuclear mass and the finite nuclear mass of ^{4}He, along with the anomalous magnetic moment of the electron. We obtained both length and velocity forms of the interaction Hamiltonian for comparison. The corrections for the nuclear mass and the electron anomaly almost cancel showing that the omission of both is a good approximation.
[1] D.C. Morton and G.W.F. Drake, Phys. Rev. A **83**, 042503 (2011).

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