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Calculation of parity nonconserving amplitude and other properties of Ra^+ MARIANNA SAFRONOVA, RUPSI PAL, DANSHA JIANG, University of Delaware, ULYANA SAFRONOVA, University of Nevada, Reno — We have calculated parity nonconserving $7s - 6d_{3/2}$ amplitude $E1_{PNC}$ in Ra^+ using high-precision relativistic all-order method where all single and double excitations of the Dirac-Fock wave functions are included to all orders of perturbation theory. Detailed study of the uncertainty of the parity nonconserving (PNC) amplitude is carried out; additional calculations are performed to estimate some of the missing correlation corrections. A systematic study of the parity conserving atomic properties, including the calculation of the energies, transition matrix elements, lifetimes, hyperfine constants, quadrupole moments of the $6d$ states, as well as dipole and quadrupole ground state polarizabilities, is carried out. The results are compared with other theoretical calculations and available experimental values.

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