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Estimation of Schiff moments using the nuclear shell model ERI TERUYA, NAOTAKA YOSHINAGA, RYOICHI ARAI, Saitama University, KOJI HIGASHIYAMA, Chiba Institute of Technology — The existence of finite permanent electric dipole moment (EDM) of an elementary particle or an atom indicates violation of time-reversal symmetry. The time reversal invariance implies violation of charge and parity symmetry through the CPT theorem. The predicted fundamental particle's EDMs are too small to be observed in the Standard Model. However, some models beyond the Standard Model produce much larger EDMs which may be observed in future. Thus, if we observe finite EDMs, we can conclude that we need a new extended model for the Standard Model and the specific value of an EDM gives a constraint on constructing a new model. Experimental efforts searching for atomic EDMs are now in progress. The EDM of a neutral atom is mainly induced by the nuclear Schiff moment, since the electron EDM is very small and the nuclear EDM is shielded by outside electrons owing to the Schiff theorem. In this work we estimate the Schiff moments for the lowest $1/2^+$ states of Xe isotopes around the mass 130. The nuclear wave functions beyond mean-field theories are calculated in terms of the nuclear shell model. We discuss influences of core excitations and over shell excitations on the Schiff moments.

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