In the study of isospin-symmetry breaking (ISB) in nuclei, the Coulomb displacement energy (CDE) is used as a measure of charge-symmetry breaking while the triplet displacement energy (TDE) is regarded as a measure of breaking in charge independence. We show that the characteristic behavior of CDE and TDE can be described systematically if the isospin non-conserving (INC) nuclear forces with $J = 0; T = 1$ are introduced into large-scale shell model calculations for the sd- and fp-shells. Theoretical one- and two-proton separation energies are predicted for mirror nuclei with masses $A = 18-95$, and locations of the proton drip-line can thereby be suggested.

In a very recent study, we also investigate the ISB effect in the sd-shell for superallowed Fermi-decay and Gamow-Teller (GT)-decay. The $J = 0; T = 1$ INC forces are found, however, to have no effects on the nuclear matrix elements. It is demonstrated that the observed large ISB correction in the $^{32}$Cl $\beta$-decay, the large isospin-mixing in the $^{31}$Cl $\beta$-decay, the small isospin-mixing in the $^{23}$Al $\beta$-decay, and the anomalously large mirror asymmetry between $^{26}$P and $^{26}$Na GT-decays can only be consistently explained when additional $J = 2; T = 1$ INC forces related to the $s_{1/2}$ orbit are introduced. Since the large mirror asymmetry is interpreted as an evidence of proton halo, we predict that $^{26}$P is a candidate for a proton-halo nucleus.