

# No-Core MCSM calculation for $^{10}\text{Be}$ and $^{12}\text{Be}$ low-lying spectra

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The low-lying excited states of  $^{10}\text{Be}$  and  $^{12}\text{Be}$  are investigated within a no-core Monte Carlo Shell Model (MCSM) framework employing a realistic potential obtained via the Unitary Correlation Operator Method. The excitation energies of the  $2_1^+$  and  $2_2^+$  states and the  $B(E2; 2_1^+ \rightarrow 0_{g.s.}^+)$  for  $^{10}\text{Be}$  in the MCSM with a treatment of spurious center-of-mass motion show good agreement with experimental data. The deformation properties of the  $2_1^+$ ,  $2_2^+$  states for  $^{10}\text{Be}$  and of the  $2_1^+$  state for  $^{12}\text{Be}$  are studied in terms of quadrupole moments, E2 transitions and the single-particle occupations. The E2 transition probability of  $^{10}\text{C}$ , the mirror nucleus of  $^{10}\text{Be}$ , is also presented. The triaxial deformation of  $^{10}\text{Be}$  is tested by the  $B(E2; 2_2^+ \rightarrow 2_1^+)$  value. The removal of the spurious center-of-mass motion shifts the  $1_1^-$  level significantly, improving agreement with experiment.

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