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# Behavior of moment of inertia in highly deformed 24Mg and 20Ne

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We suggest the self-consistent description of the ground-state moment of inertia (MI) in highly prolate light nuclei $^{24}$Mg and $^{20}$Ne (with experimental equilibrium axial quadrupole deformations $\beta_2$=0.605 and 0.72, respectively [1]). These nuclei provide an interesting opportunity to explore dependence of MI on the pairing, ground-state correlations and nuclear shape at extreme deformations. The calculations are performed with Skyrme forces SVbas, SkM*, and Sly6 for deformation range $0.1 < \beta_2 < 1.6$. Three approaches are applied [2]: Inglis-Belyaev (within Hartree-Fock-Bogoliubov method), QRPA Thouless-Valatin (within Quasiparticle Random-Phase Approximation method [3]) and ATDHF (Adiabatic Time-Dependent Hartree Fock method). For Inglis-Belyaev and ATDHF calculations, the code SKYAX [4] was used. All three approaches show that, near the equilibrium deformation, the pairing in $^{24}$Mg and $^{20}$Ne vanishes and we get the maximum of MI. With further grow of the deformation above the equilibrium values, we see decrease of MI. Such behavior of MI is explained by rearrangement of single-particle levels with deformation. The analysis reveals main two-quasiparticle contributions responsible for the behavior of MI in different regimes.

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