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Nuclear Shape Coexistence in the $0\nu\beta\beta$ Parent ^{116}Cd

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Neutrinoless double-beta ($0\nu\beta\beta$) decay is a speculated, extremely rare nuclear phenomenon, which can only occur if neutrinos are massive Majorana particles. Theoretical works have shown that the decay rate is extremely influenced by the nuclear shape of the decay partners. In this context, the ^{116}Cd$\rightarrow^{116}$Sn decay is expected to be a good candidate to observe such an exotic phenomenon. In addition, both decay partners are expected to exhibit nuclear shape coexistence, which may also affect the rate of the $0\nu\beta\beta$ decay.
We propose the multi-step Coulomb-excitation measurement of ^{116}Cd using the AGATA+SPIDER experimental setup. The aim of the experiment is the determination of the shape of $0^{+}_{1,2}$ states in terms of the (β_2, γ) quadrupole deformation parameters.

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