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Evolution of deformation along the calcium isotopic chain: Coulomb excitation of ^{44}Ca

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We propose to perform a dedicated Coulomb excitation of the ^{44}Ca at INFN LNL using the AGATA γ -ray array coupled with the charged-particle array SPIDER. The aim of the experiment is to study for the first time the deformation of the low-lying structures in ^{44}Ca in order to construct a more systematic view on the deformation of calcium isotopes. Data from this experiment should be sufficient to study the mixing of the states with different deformation. The obtained data could also allow for unique insight into the nature of the, presumably, super-deformed structure in ^{44}Ca in an analogous way to our previous work on ^{42}Ca , if the matrix elements connecting this structure to the normally-deformed structures are favorable or are similar to those determined for ^{42}Ca .

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