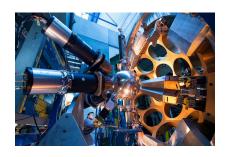
The 25th AGATA week and ACC Meeting



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(online) Shape coexistence in 52 Cr: lifetime measurement of the $\mathbf{0}_2^+$ and the $\mathbf{4}_1^+$ states

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Coexistence between spherical and deformed shapes is largely found in and near semi-magic or doubly-magic nuclei.

The region between the doubly-magic 48 Ca and 56 Ni nuclei is predicted to present phenomena of shape co-existence, although experimental information on E0 and E2 transition strengths connecting deformed and spherical configurations remains rather limited. In 52 Cr ($Z=24,\ N=28$), a recent measurement of the X(E0/E2) ratio between the deformed 0_2^+ state and the spherical 0_1^+ and 2_1^+ states suggests that sizeable E0 strengths are indeed present. However, the determination of the ρ^2 (E0) value–crucial to characterizing the nature of shape coexistence in this nucleus–requires a measurement of the lifetime of the excited state.

A lifetime measurement of $^{52}\mathrm{Cr}$ was carried out at the Legnaro National Laboratories using the γ -ray tracking array AGATA, coupled to the charged-particle detector SPIDER, with the nucleus of interest populated via a two-neutron transfer reaction. We will present the status of the ongoing analysis together with preliminary results concerning the 4_1^+ state.

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