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AGATA@GSI (S433): Collectivity in ^{52}Fe revisited with relativistic RIB techniques

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In this work, we studied the structure of the pf-shell $N=Z$ nucleus ^{52}Fe with relativistic radioactive ion beam techniques to reveal the collectivity in this region. ^{52}Fe presents an interesting case in which we see the onset of a collective structure that is more common nuclear property in heavier nuclei. We deduced the reduced transition probability of the $0_{g.s}^+ \rightarrow 2_1^+$ and $0_{g.s}^+ \rightarrow 2_2^+$ transitions by measuring the relativistic Coulomb excitation cross sections using state-of-the-art detectors AGATA at GSI [1, 2]. Our results deviate from two other previously reported $BE(2)$ values [3, 4]. The reduced transition probability of a third state, observed in this study, will also be exhaustively discussed. The results will be interpreted in the framework of the LSSM.

[1] The AGATA Collaboration, Nuclear Instruments and Methods in Physics Research A, 668 (March) (2012), 26.

[2] C. Domingo-Pardo, et al. Nucl. Ins. and Meth. in Phys. Res. Sec. A 694 (2012) 297

[3] K. L. Yurkewicz, et al. Phys. Rev. C 70 (2004) 034301.

[4] K. Arnsward, et al. Physics Letters B 772 (2017) 599 –606.

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