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Collectivity beyond $N=40$ in neutron-rich Cr and Fe isotopes

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An enhanced collectivity was discovered in the $N=40$ Cr and Fe isotopes, but its evolution beyond $N=40$ and the maximum of collectivity remains unknown. The first campaign of the Shell Evolution And Search for Two plus Energies At the RIBF (SEASTAR) scientific program took place in Spring 2014 at the Radioactive Isotope Beam Factory. It focused on the first spectroscopy of the more neutron-rich attainable nuclei such as Cr and Fe $N>40$ isotopes via proton-knockout reactions with the unique coupling of the DALI2 gamma array with the MINOS device. MINOS is composed of a thick liquid hydrogen target and a Time Projection Chamber (TPC). The charged particles produced by knockout reactions are detected in the TPC and enable the reconstruction of the reaction vertex with the use of a tracking algorithm, thus ensuring an optimal Doppler correction for the measured γ -rays by DALI2. The first analysis results of the SEASTAR campaign will be presented with the first spectroscopy of ^{66}Cr and $^{70,72}\text{Fe}$. The performances of the MINOS TPC will also be detailed.

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