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Report on the data analysis of the experiment 23.015 devoted to the search for the decay-out of the oblate, triaxial and highly-deformed bands in $^{136,137}\text{Nd}$

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The experiment 23.015 performed in October 21-26, 2023 was devoted to the search for the decay out of an extremely regular rotational band in ^{137}Nd , interpreted as built on oblate shape, that extends to a spin of about $75/2$ and an excitation energy of 4.5 MeV above yrast at the highest spins. We measured 7 days with the $^{33}\text{S}+^{110}\text{Pd}$ reaction at 180 MeV and the AGATA+EUCLIDES setup. The status of the data analysis will be reported. This band is interesting because is highly excited at very high spin, where the number of states per keV are several orders of magnitude higher than close to the yrast line. It survives as a long cascade of discrete transitions in a very hot $E^* - I$ region where the bands are expected to be completely damped, which is in contradiction with the present understanding of the nuclear structure at high temperature. CNS calculations suggests normal-deformed oblate shape for the band O. However, an alternative interpretation assuming much higher band-head spin ($+13\hbar$) and deformation has been recently proposed. We therefore proposed to perform a high-statistics thin-target measurement to firmly link the observed band to low-lying states and to fix its spins and parity.

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