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Investigating the Nuclear Level Density and γ-ray Strength Function of ^{152,154}Sm

Monday 27 May 2024 12:00 (20 minutes)

The samarium isotopic chain is one of the best choices to study the evolution of the NLD and γSF as a function of deformation. This chain starts at the near spherical and stable ^{144}Sm, which has a magic number of 82 neutrons, to the well deformed isotope of ^{154}Sm. This isotopic chain have many stable isotopes which makes it one of the few isotopic chains which we can study at stable beam facilities like the Oslo Cyclotron Laboratory. This gives us a unique opportunity to investigate how the NLD and γSF evolve with deformation and increasing mass. In this talk I will focus on the results obtained for ^{152}Sm and ^{154}Sm.

In 2018, an experiment was carried out at the Oslo Cyclotron Laboratory
in which 15 and 16 MeV proton beams were irradiated on targets of ^{152}Sm and ^{154}Sm, respectively, allowing the study of the ^{152}Sm(p, p$'\gamma$)^{152}Sm and
^{154}Sm(p, p$'\gamma$)^{154}Sm reactions. This work uses the Oslo method to analyze these data sets to simultaneously extract the NLD and γSF. The results from these experiments will be discussed in this talk with a specific focus on the scissors resonance.

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