

Combined lifetime and transition-probability measurements in ^{96}Zr via unsafe Coulomb excitation

Tuesday 3 October 2023 10:30 (20 minutes)

We propose to Coulomb excite ^{96}Zr on a ^{116}Sn target 1-mg/cm^2 thick, using the maximum energy of ^{96}Zr beam available from the TANDEM-ALPI facility (5.5 MeV/u). The data resulting from “safe” Coulomb excitation ($24^\circ \leq \theta_{LAB} \leq 27^\circ$) will be used to extract $B(E2)$ and $B(E3)$ values. Lifetimes of excited states that are within the sensitivity range of the RDDS method will be measured with aid of a plunger device. This includes the 3_1^- state, which lifetime is important in the context of the large $B(E3)$ strength discussed above, as well as the 2_2^+ state involved in the type-II shell-evolution scenario. The lifetime, or a limit thereof, will be also measured for the 6^+ state, shedding light on its possible character as a two-phonon state related to an octupole vibration. Based on our experience with the same setup, five to seven distances for the plunger in five days of measurement will be sufficient to extract these lifetimes.

Authors: VALIENTE DOBON, Jose’ Javier (Istituto Nazionale di Fisica Nucleare); ZIELINSKA, Magda (CEA Saclay); ROCCHINI, Marco (Istituto Nazionale di Fisica Nucleare); MARCHINI, Naomi (Istituto Nazionale di Fisica Nucleare)

Presenter: ZIELINSKA, Magda (CEA Saclay)

Session Classification: LoI 2