

Search for a Josephson-like effect in the $^{116}\text{Sn}+^{60}\text{Ni}$ system

venerdì 21 giugno 2024 18:00 (20 minuti)

The pairing interaction, responsible for the two-nucleon correlation, plays a fundamental role in defining the low-energy spectra of atomic nuclei and the properties of their ground state. The effect of pairing correlations in the reaction dynamics can be explored by using heavy-ion reactions, in particular those involving a transfer of few nucleons. In this context, an interesting analogy between the nuclear pairing and the Cooper pairing in superconductors can be investigated through heavy-ion collisions, focusing on nucleon-pair transfer and searching for a possible effect, predicted by a BCS-like theory applied to nuclei: the Josephson Effect. The idea was already suggested in the '70s, but only recently more quantitative calculations, assisted by promising experimental results, revived the interest on the subject and ignited a more systematic research. The transfer of neutron Cooper pairs was therefore studied through the interaction between two superfluid nuclei, ^{116}Sn and ^{60}Ni , using the Advances Gamma-Ray Tracking Spectrometer AGATA and the large-acceptance magnetic spectrometer PRISMA at Legnaro National Laboratories, INFN.

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Classifica Sessioni: On-going analysis