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The INDRA-FAZIA Setup: Investigating Isospin Transport as a Signature for Symmetry Energy Effects in Heavy Ion Collisions

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Heavy-ion collisions in the Fermi energy regime are widely used to probe the properties of nuclear matter far from equilibrium: among other topics, they allow to investigate isospin transport phenomena, which can be interpreted in the framework of the Nuclear Equation of State. The INDRA-FAZIA apparatus [1], operating in GANIL, features the best characteristics to study such kind of phenomena, combining the optimal (Z,A) identification of FAZIA for the ejectiles in the quasiprojectile (QP) phase space, and the large angular coverage of INDRA.

This contribution will give an overview of the most recent INDRA-FAZIA results, mainly focusing on its first experiment, in which the reactions ^{64,58}Ni+^{64,58}Ni at 32 and 52AMeV have been measured. The isospin diffusion effect has been highlighted by studying the isospin content of both light and heavy fragments belonging to the QP phase space [2] by exploiting the isospin transport ratio technique [3]. A comparison with transport models has been carried out [4,5].
The high granularity of FAZIA also allowed us to study the isospin content of the two heavy fragments produced in the QP breakup, simultaneously detected and mass identified. Such exit channel of semiperipheral collisions has been selected and compared with the more populated binary output, leading to novel results that add valuable information for a comprehensive view of the breakup process [4,6].
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