



Contribution ID: 100

Type: not specified

Evidence of non-statistical effects in the decay of $^{36,37}\text{Ar}^*$

Monday, 3 September 2018 14:55 (20 minutes)

The fusion-evaporation $^{24}\text{Mg}+^{12,13}\text{C}$ reaction at 162 and 142 MeV respectively has been investigated with the GARFIELD and RingCounter detectors, in operation at the LNL (Legnaro National Laboratories of INFN). Thanks to the large coverage (about 70% of the total solid angle) and to the good identification capability in terms of charge and energy, it is possible to obtain a very clean data set where the total charge of the $^{36,37}\text{Ar}$ compound nucleus is detected. *The analysis of the Fusion-Evaporation or Fusion-Fission chains for those complete events can be compared with simulated events. In particular, a Hauser-Feshbach Monte-Carlo developed by the NUCL-EX collaboration and particularly optimized for light systems (HFI) and the GEMINI++ code, widely used to describe fusion-evaporation and fusion-fission reactions, will be used.*

Following the previous analysis on light system as $^{12}\text{C}+^{12}\text{C}$, $^{16}\text{O}+^{12}\text{C}$ performed with the same apparatus, LCP energy spectra, angular distribution and Branching Ratios (BR) of the different experimental channels will be studied in details and compared with simulations in order to disentangle possible effects due to clustering preformation in the CN. Moreover, the possible difference in the decay of $^{36,37}\text{Ar}$ created at the same excitation energy will be put in evidence.

Selected session

Nuclear structure, spettroscopy and dynamics

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Session Classification: Nuclear Structure and Dynamics (SALONE BOLOGNINI)