Contribution ID: **73** Type: **Oral**

Studying the decay of 46Ti* at different excitation energies and through different entrance channels: does partner structure influence the competing mechanisms and the following compound nucleus decay?

The exclusive study of light charged particles emission in hot light composite systems is a useful tool to underline possible structure effects on the competition between different reaction mechanisms and, in particular the possible evidence of nuclear clustering effects, which may change the expected decay chain probability. In particular, studying the competition between pre-equilibrium and thermally emitted particles the influence of projectile cluster structure may be evidenced: the NUCL-EX collaboration (INFN, Italy) has carried out an extensive research campaign on pre-equilibrium emission of light charged particles from hot nuclei [1].
In this framework, the reactions 16O+30Si, 18O+28Si and 19F+27Al at 7 MeV/u and 16O+30Si at 8MeV/n have been measured using the GARFIELD+RCo array [2] at Legnaro National Laboratories, as a first step, where the fast emission mechanisms could be kept under control. After a general introduction on the experimental campaign performed on different systems, which have evidenced anomalies in the alpha-particle emission channel, this contribution will focus on the analysis results obtained in the measurement reported above, showing in an exclusive way the observed effects related to the entrance channels. The experimental results will be compared to model prediction, for which the same filtering and complete event selection have been applied. This has been performed in order to take into account all possible distortions introduced due to finite geometry and analysis selection.

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[1] . Marchi et al., F. Gramegna et al. - Nuclear Particle Correlations And Cluster Physics – Chapter 20 –pag. 507 (2017) –ISBN 978-981-3209-34-3; L. Morelli et al., Journ. of Phys. G 41 (2014) 075107; L. Morelli et al., Journ. of Phys. G 41 (2014) 075108; D. Fabris et al., PoS (X LASNPA), 2013, p. 061.D; V.L. Kravchuk, et al. EPJ WoCs, 2 (2010) 10006; O. V. Fotina et al., Int. Journ. Mod. Phys. E 19 (2010) 1134.
[2] F. Gramegna et al., Proc. of IEEE Nucl. Symposium, 2004, Roma, Italy, 0-7803-8701-5/04/; M. Bruno et al., M. Eur. Phys. Jour. A 49 (2013) 128.

Primary author: GRAMEGNA, fabiana (INFN - Laboratori nazionali di Legnaro)

Presenter: GRAMEGNA, fabiana (INFN - Laboratori nazionali di Legnaro)

Track Classification: Track A