

Light exotic nuclei transfer reactions with CHIMERA detector at LNS

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Relatively large yields of various neutron rich exotic beams (⁶He, ^{8,9}Li, ^{10,11}Be, ¹³B, ^{16,17}C), produced through the inflight fragmentation of ¹⁸O beams at 55 A·MeV, are available at LNS [1]. Using the CHIMERA detector [2,3], we started a campaign to study transfer reactions, with proton and deuteron enriched targets. The kinematical coincidence method was used to extract high resolution angular distributions of binary reactions from the measured light particle energy spectra [4]. An example is shown in figure for the reaction ¹⁰Be+p→⁹Be+d, previous data on d+¹⁰Be→t+⁹Be [5] are also shown. We were able to disentangle some excited levels, exploiting the γ -rays detected in the CsI(Tl) detectors of the Chimera telescopes. Preliminary data on some reaction channels will be presented. The complete analysis of these data will be part of a systematic research for a dependence of cross sections by the observed or claimed halo structures of light neutron rich nuclei.

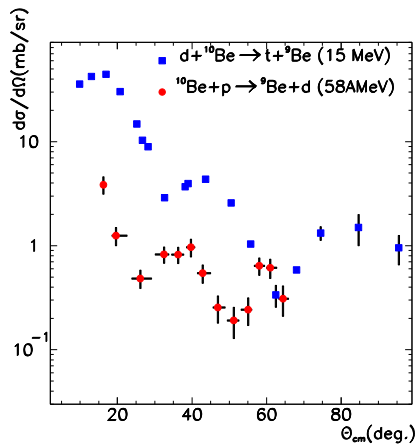


Figure 1: Angular distribution for the reaction $^{10}\text{Be}+p \rightarrow ^9\text{Be}+d$ from ref. [4]

[1] see <http://fribs.lns.infn.it/upgrade-results.html>

[2] A.Pagano et al, Nucl. Phys. A **734** (2004) 504

[3] A.Pagano, Nuclear Physics News International, 22:1(2012)25.

[4] L.Acosta et al submitted to NIM A [arXiv:1212.4593v2](https://arxiv.org/abs/1212.4593v2) [nucl-ex]

[5] D.L.Auton Nucl.Phys. A157 (1970) 305.