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## Status of the CLIR experiment at LNS

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The CLIR (Clustering in Light Ion Reactions) experiment performed at INFN Laboratori Nazionali del Sud (LNS) aims at investigating cluster structures of neutron-rich nuclei via break-up reactions on a light target. The radioactive ions of interest were produced at the FRIBs@LNS facility [1], through the In-Flight Fragmentation technique. A 18O (55 MeV/u) primary beam was fragmented on a 1500  $\mu\text{m}$  thick  $^9\text{Be}$  target, producing a cocktail beam of several radioactive isotopes. These included many species such as  $^6\text{He}$ ,  $^8,9\text{Li}$ ,  $^{11}\text{Be}$ ,  $^{13,14,15}\text{B}$ ,  $^{17}\text{C}$  and, in particular among the others, the  $^{16}\text{C}$  and  $^{10}\text{Be}$  isotopes, for which cluster structures have been already studied at LNS [2]. Identification of the cocktail beam was performed by the  $\Delta E$ -TOF method, using a 150  $\mu\text{m}$  thick Si detector. A  $\text{C}_2\text{H}_4$  polyethylene (protons) target was used to trigger the break-up reactions and the produced fragments were detected by the high-granularity femtoscope array FARCOS [3] coupled with the CHIMERA  $4\pi$  multidetector [4]. Calibrations have been performed for the tagging detector, and the CHIMERA and FARCOS arrays. Very preliminary results of this analysis will be presented.

[1] P. Russotto et al., Jour. of Phys.: Conf. Series, 1014 (2018) 012016 and ref. therein.

[2] D. Dell'Aquila et al., Phys. Rev. C, vol. 93, p. 024611, 2016.

[3] E.V. Pagano et al., EPJ Web of Conferences, vol. 117, p. 10008, 2016.

[4] A. Pagano et al., Nucl. Phys. A704, 504, 2004.

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