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Recent results on the construction of a new correlator for neutrons and charged particles

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With the advent of new facilities for radioactive ion beams mainly rich in neutrons, like SPES @ LNL, FRAISE @ LNS and FAIR @ GSI just to give some examples, the detection of neutrons, in conjunction with charged particles, in Heavy ion collisions with radioactive beams becomes mandatory. Neutron detection requires both high angular and energy resolutions. Consequently, the construction of new detection systems suitable for these experimental purposes becomes an important goal. The contribution includes two correlated sections: the first section presents, the results of recent tests performed using a new plastic material the EJ276 both in the "green-shifted" and in the ordinary version, coupled with PMT and Si-PMT will be shown. These experimental works aim at the construction of a prototype of a detector for neutrons and charged particles with high angular and energy resolutions.

The second section discusses, the recent results about FARCOS (Femtoscope Array for COrrelation and Spectroscopy) used in the CHIFAR experiment will be discussed. The experiment was performed at LNS at the end of 2019. FARCOS was coupled with CHIMERA in order to study the neutron rich system $^{124}\text{Sn}+^{64}\text{Ni}$, the neutron poor one $^{112}\text{Sn}+^{58}\text{Ni}$ and, in addition, the $^{124}\text{Xe}+^{64}\text{Zn}$ system isobaric to the neutron rich one, but with the same isospin of the neutron poor, at the bombarding energy of 20 MeV/u.

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Classification de Session: New Experimental Tools, Detection Techniques and Facilities

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