

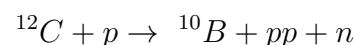
Project: “Studies of Baryonic Matter at the Nuclotron (BM@N)”

Addendum to the physics program: “Probing Short-Range-Correlations.” (SRC)

The physics to be investigated here concerns two-body correlations in the nucleus. To study these, the ejected nucleons are measured separately so as to establish their properties. Short-range-correlations (SRC) make it possible to obtain insight in the structure of the nucleus by probing correlations between neutrons and protons, and also (to a lesser extent) proton-proton correlations. The momentum distribution of single nucleons in a nucleus is fairly well known and well measured but not so much the correlations. During the past decade many interesting features have emerged about the joint distribution of momentum pairs and it is the subject of the present proposal to study these in detail using the BM@N detector at the JINR.

The interesting point is that, as shown in the project, even in nuclei with many more neutrons than protons, the high-momentum distribution is equally populated with protons and neutrons despite the larger abundance of neutrons. It makes it possible to go beyond the independent particle description of the nucleus.

In order to learn about the momentum distributions of correlated pairs it is necessary to measure the ejected nucleons in collisions. The setup to measure these pairs is presented in great detail and is well suited to investigate the short-range correlations. The proposal presented here is an excellent one to measure the short-range correlations in a nucleus. Several reactions will be studied in detail, one of these is for example (amongst many others):



With the appropriate positioning of the detectors this will indeed lead to a useful study of short-range correlations of pairs inside the nucleus.

The description of the project is extremely well presented, compliments to the authors.

This is an excellent proposal and deserves to be supported.

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