

Subject: Development of a new kind of neutron detector

Letter of expression of interest

The E563 Collaboration includes about fifteen persons from different laboratories, French, Greek, Serbian and Czech. It aims for a better understanding of the origin of elements called "p nuclei". For this objective, the collaboration has undertaken a series of studies to measure several nuclear reactions at low energy with stable and radioactive beams, especially those that will be produced with the SPIRAL2 facility. These measurements will be used to constrain the parameters used in the theoretical nuclear models, such as alpha optical potentials. In the list of these reactions of astrophysical interest, some are of $X(\alpha, n)Y$. For example, we can measure the reaction $^{91}\text{Kr}(\alpha, n)^{94}\text{Sr}$. It requires the measurement of the neutrons produced in a noisy gamma environment because of the intense radioactive beams. In this letter, we wish to express our interest in the study and design of a new type of neutron detector that could make an exceptional noise rejection of gamma background. That proposed under the name « SOLID » seems particularly interesting.

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