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Post-stripper study for the (20Ne,20O) double charge exchange reactions at zero degrees within the NUMEN experiment

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A study of different post-stripper materials for the (20Ne,20O)double charge exchange and (20Ne,20F)single charge exchange reactions using the MAGNEX spectrometer at 15 MeV/A is presented.
Recently, some experiments have been performed at INFN-Laboratori Nazionali del Sud to study the 116Cd(20Ne,20O)116Sn double charge exchange reactions at zero degrees using the MAGNEX spectrometer together with the competing processes. These measurements belongs to the experimental campaign planned in the NUMEN project (NUclear Matrix Elements for Neutrinoless double beta decay).
In this kind of experiment with 20Ne10+ beam, it is necessary to take into account the abundance of the beam components characterized by lower charge states (20Ne9+ and 20Ne8+). These lower components have a magnetic rigidity that is similar to the ejectiles of our interest (20F9+ and 20O8+ for single charge exchange and double charge exchange reaction, respectively) and this cause a limitation in the detector tolerable rate. A system of shields before the focal plane detector entrance was placed to stop such undesired background. Together with the shields solution, the use of a good post-stripper material was taken into account in order to minimize the amount of residual 20Ne9+ and20Ne8+ beams downstream of the 116Cd target. A study of different post-stripper materials for the (20Ne,20O) double charge exchange and (20Ne,20F) single charge exchange reactions using the MAGNEX spectrometer at 15 MeV/A is presented.

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