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Study of the single-nucleon transfer reactions in the $^{18}\text{O}+^{48}\text{Ti}$ collision at 275 MeV

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Single nucleon transfer reactions are considered among the best resources for probing single particle configurations in the populated many-body nuclear states. Besides a valuable spectroscopic tool, transfer reactions offer also an insight of the reaction dynamics. An example is the study of the degree of competition between sequential nucleon transfer and charge exchange reactions, the latter being of particular interest in the contest of single and double beta decay studies. Into this context, one-proton and one-neutron transfer reactions for the system $^{18}\text{O}+^{48}\text{Ti}$ were measured at the energy of 275 MeV for the first time under the NUMEN and NURE experimental campaigns. The experiment was carried out at the MAGNEX facility of INFN-LNS in Catania. Angular distribution measurements for the reaction ejectiles were performed by using the MAGNEX large acceptance magnetic spectrometer. The data were analyzed by using two different reaction models aiming at validating the adopted reaction and nuclear structure inputs as well as to study the effect of inelastic excitations to the low-lying states of the projectile and target nuclei to the transfer cross-sections. The results of the analysis will be presented and discussed.

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