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## Fast neutron induced transmission to study resonances in ( $\alpha$ ,n) reactions

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Alpha-induced reactions at thermonuclear energies are difficult to measure directly, if the cross section is too low, or highly enriched isotopic material is required as target material. Transmission of fast neutrons in the MeV range can be used to find resonances that would be difficult to study in the direct reaction. In this way, the reaction  $^{17}\text{O}(\alpha, n)^{20}\text{Ne}$  which can be relevant for the neutron flux in the weak s-process can be investigated as well as  $^{11}\text{B}(\alpha, n)^{14}\text{N}$  reaction, which can act as a neutron source in first generation stars. The fast neutron time-of-flight facility nELBE has been used to measure the total cross section of natNe and of natN in the energy range from 100 keV to 10 MeV. High pressure cylindrical gas cells were used as target samples with an areal density of 0.1624 and 0.1974 atoms/barn respectively. The transmitted neutrons were detected using a fast 5 mm thick plastic scintillator with coincident read out on both ends resulting in a low detection threshold of approximately 10 keV. In neon several previously unknown resonances were found, while in nitrogen the shape of the first resonance at 433 keV implies a different spin than evaluated before.

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