

Measurements of Cross Section Enhancement of ${}^7\text{Li}({}^1\text{H}, \alpha)\alpha$ Reaction in Four Lithium Bearing Materials

Thursday, 13 February 2025 21:00 (15 minutes)

The reaction rate and subsequent cross section enhancement to the ${}^7\text{Li}({}^1\text{H}, \alpha)\alpha$ reaction was measured in samples of lithium tungstate (Li_2WO_4), lithium manganate (LiMn_2O_4), lithium titanate spinel ($\text{Li}_4\text{Ti}_5\text{O}_{12}$), and lithium iron phosphate (LiFePO_4) at lab frame beam energies of 100 keV, 200 keV, 500 keV, and 1 MeV using the Tandatron system at Western University.

Analysis is ongoing but calculations suggest a strong enhancement as high as a factor of ~4 for the manganate, titanate, and iron phosphate at 100 keV, with the enhancement decreasing to within theoretical values as incident energy increased to 1 MeV.

The lithium tungstate values on the other hand remained closer to theoretical (bare values taken from END-FVIII) across the energy range tested, a result that aligns well with values reported in literature.

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