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Neutron spectroscopy of 26Mg states: Constraining the stellar neutron source 22Ne(α,n)25Mg

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This study presents accurate and high-resolution measurements of the 25Mg(n,γ)26Mg and 25Mg(n,tot) cross sections, from thermal energies up to approximately 300 keV. Through a combined R-matrix analysis of the experimental data, the pertinent neutron resonances for the interaction with 25Mg were characterized. Consequently, this analysis led to an improved set of reaction widths, along with a definitive spin/parity assignment for the corresponding excited states in 26Mg.

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