

THE LEVEL STRUCTURE OF ^{18}Ne AND ITS IMPORTANCE IN THE $^{14}\text{O}(\alpha, p)^{17}\text{F}$ REACTION RATE

Sergio Almaraz-Calderon
University of Notre Dame
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In explosive astrophysical scenarios such as Novae and X-ray bursts, temperatures and densities are high enough that it is possible to bypass the beta decays of the waiting points of the Hot CNO cycle (^{14}O and ^{15}O) by alpha captures, leading towards the αp -process and rp-process where proton rich nuclei are made. One of the two paths for breaking out the HCNO cycle is the reaction sequence $^{14}\text{O}(\alpha, p)^{17}\text{F}(p, \gamma)^{18}\text{Ne}$, these both reactions proceed through resonant levels on ^{18}Ne , making the reactions rates very sensitive to the energies of the resonances, spins and partial and total widths of the relevant levels in ^{18}Ne . In this talk, new experimental results on the study of the resonant level structure of ^{18}Ne above the α -decay threshold and its relevance for the astrophysical important $^{14}\text{O}(\alpha, p)^{17}\text{F}$ reaction rate will be discussed.

Nuclear
Seminar

All interested
persons are
cordially
invited to
attend.