

Astrophysical S factor for the $^{17}\text{O}(p,\gamma)^{18}\text{F}$ reaction at Novae energy

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The $^{17}\text{O}(p,\gamma)^{18}\text{F}$ and $^{17}\text{O}(p,\alpha)^{14}\text{N}$ reactions are part of the hot CNO cycle, their reaction rate is required for evaluating the elemental abundances in a number of hydrogen burning stellar sites including Red giants, AGB stars, Massive stars and Classical Novae. In particular, in Novae the ^{17}O and ^{18}F isotopes are regulated by the rate of the $^{17}\text{O}(p,\gamma)^{18}\text{F}$ reaction. At the LUNA facility its cross section has been determined in a range of energy from 200 keV up to 360 keV in the CM system and also the $\omega\gamma$ of the 183 keV resonance has been measured, solving the discrepancy between the two previous results of Chafa et al. and Fox et al. With this new set of data we are able to cover the all Gamow peak for Classical Nova and to calculate the reaction rate in this scenario reducing the previous uncertainties reported in literature.