^{17}O HYDROGEN BURNING AT THE ENERGIES OF CLASSICAL NOVA AT LUNA

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Hydrogen burning of ^{17}O sensitively influences nucleosynthesis in a number of stellar sites, including red giants, asymptotic giant branch (AGB) stars, massive stars, and classical novae. In particular, the ratio between reaction rates of ^{17}O(p,α)^{14}N (Q = 1.2 MeV) and ^{17}O(p,γ)^{18}F (Q = 5.6 MeV) channels on ^{17}O is one of the most important parameters for the galactic synthesis of ^{17}O, the stellar production of radioactive ^{18}F, and for predicted O isotopic ratios in premolar grains. The LUNA collaboration has studied the ^{17}O(p,γ)^{18}F in a wide energy range (from 167 up to 360 keV) covering completely the energy of the nova scenario and the new results reduce by a factor of 4 the precedent evaluation of the ^{17}O(p,γ)^{18}F reaction rate. In addition, the 183.3 keV resonance strength has been determined with unprecedented precision solving the discrepancies of previous experimental efforts.