The $^{7}\mathrm{Be}(\alpha,\gamma)^{11}\mathrm{C}$ with DRAGON for νp–process nucleosynthesis

A. Psaltis,[1] A. A. Chen,[1] D. S. Connolly,[2] B. Davids,[2] G. Gilardy,[3,4] R. Giri,[5] U. Greife,[6] W. Huang,[2,7] D. A. Hutcheon,[2] J. Karpesky,[6] A. Lennarz,[2] J. Liang,[1] M. Lovely,[6] S. N. Paneru,[5] C. Ruiz,[2] G. Tenkila,[8] and M. Williams[2]

[1] *McMaster University*
[2] *TRIUMF*
[3] *Joint Insitute for Nuclear Astrophysics, University of Notre Dame*
[4] *Université de Bordeaux*
[5] *Ohio University*
[6] *Colorado School of Mines*
[7] *University of Northern British Columbia*
[8] *University of British Columbia*

The production of the p–nuclei is one of the unsolved puzzles in nuclear astrophysics. A possible mechanism is the nucleosynthesis in the neutrino–driven winds of core–collapse supernovae (νp–process), but it carries uncertainties, mostly in the supernova dynamics and the nuclear physics input [1, 2]. The *pp*-chain breakout reaction $^{7}\mathrm{Be}(\alpha,\gamma)^{11}\mathrm{C}$, which occurs prior the supernova explosion, was identified as an important link which can influence the nuclear flow of the νp–process [2]. Nevertheless, its reaction rate is poorly known over the relevant energy range (T= 1.5-3 GK). To improve the $^{7}\mathrm{Be}(\alpha,\gamma)^{11}\mathrm{C}$ rate for νp–process nucleosynthesis temperatures, the first direct measurement of resonances with unknown strength was recently performed at TRIUMF. A radioactive ^{7}Be beam ($t_{1/2}$ = 53.24 d) beam and the DRAGON recoil separator were used [3]. The experimental details and preliminary results for the resonance strengths will be discussed.

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