

Direct Measurement of Resonances in ${}^7\text{Be}(\alpha,\gamma){}^{11}\text{C}$ With DRAGON

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Nucleosynthesis of the p -nuclei is one of the remaining unsolved puzzles in nuclear astrophysics. One possible mechanism for production of p -nuclei is the νp -process, which is thought to occur in the ejecta of core-collapse supernovae. A recent study found that the p - p chain breakout reaction ${}^7\text{Be}(\alpha,\gamma){}^{11}\text{C}$ significantly influences nuclear flow in the νp -process. However, the ${}^7\text{Be}(\alpha,\gamma){}^{11}\text{C}$ reaction rate is poorly known over the temperature range of interest ($T=1.5\text{--}3$ GK). In this temperature range, the astrophysical reaction rate is dominated by resonant capture to states in ${}^{11}\text{C}$ within the Gamow window, three of which have unknown resonance strengths. A new direct measurement of ${}^7\text{Be}(\alpha,\gamma){}^{11}\text{C}$ was performed at TRIUMF's DRAGON recoil separator in order to measure the strengths and energies of these resonances. Experimental methods and preliminary results will be discussed.

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