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Measurement of the ^{7}Be$(\alpha,\gamma)^{11}$C reaction with DRAGON for neutrino-driven wind nucleosynthesis

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Nucleosynthesis in the neutrino-driven wind of core-collapse supernovae has gained in popularity in recent years and it is thought to produce light neutron-deficient nuclei with $A \leq 110$ via the νp-process. However, this scenario exhibits uncertainties related to the explosion dynamics and the underlying nuclear physics input. The ^{7}Be$(\alpha,\gamma)^{11}$C reaction has been shown to affect the production of $90 \leq A \leq 100$ nuclei, by changing the wind composition prior to the νp-processing onset. Nevertheless, there is a lack of experimental information about its rate in the relevant temperature range (T= 1.5-3 GK). To improve the ^{7}Be$(\alpha,\gamma)^{11}$C reaction rate for the νp-process, the first direct measurement of resonances with unknown strength was recently performed at TRIUMF using an intense radioactive ^{7}Be ($t_{1/2}$= 53.24 d) beam and the DRAGON recoil separator. The experimental challenges, preliminary results and nucleosynthesis calculations to study the effect of the new rate will be discussed.

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