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Studying the $^{12}\text{C}(^{12}\text{C},\alpha)^{20}\text{Ne}$ reaction at stellar energies using a novel technique

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The $^{12}\text{C}+^{12}\text{C}$ fusion reaction plays an important role in various astrophysical models, such as type Ia supernova, superburst, and the evolution of massive star. The direct measurements are limited by backgrounds at energies above $E_{\text{c.m.}}=2.1$ MeV. To overcome this limitation, we have developed a novel technique to study the $^{12}\text{C}(^{12}\text{C},\alpha)^{20}\text{Ne}$ reaction by using a time projection chamber. Preliminary results will be presented in this presentation.

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