

— 第841回九大原子核セミナー —

講師 : Dr. E. D. Johnson (Florida State University)

演題 : The Role Oxygen Plays in Stellar Evolution

日時 : 3月7日(金) 16時30分~

† 今回は通常と時間が異なりますのでご注意ください。

場所 : 理学部 物理大学院講義室 (理学部2号館2階2263室)

概要

The reactions $^{13}\text{C}(\alpha, n)$ and $^{14}\text{C}(\alpha, \gamma)$ are thought play important roles in the in stellar evolution. Unfortunately, direct measurement of these reactions is currently impractical due to prohibitively small cross sections. This has led to the development of indirect methods of measuring reaction rates. One such method is the asymptotic normalization coefficient (ANC) technique. We measured the ANC of the most critical resonance in ^{17}O , and were able to reduce the uncertainty in the $^{13}\text{C}(\alpha, n)$ reaction rate from $\sim 300\%$ to $\sim 25\%$ [E. D. Johnson et al., PRL 97 (2006)]. We used the same experimental technique to measure the $^{14}\text{C}(\alpha, \gamma)$ reaction rate, analysis of this experiment is not finished, but preliminary results will be discussed. We have also measured the α -cluster structure of ^{18}O using the Thick Target Inverse Kinematics (TTIK) technique. Results of this experiment along with astrophysical implications will be discussed.

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