

# LNGS SEMINAR SERIES

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## **A renewed evaluation of the $3\text{He}(a,g)$ reaction**

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*The capture reaction  $3\text{He}(a,g)$  is a critical reaction in Big Bang Nucleosynthesis as it is the main way  $7\text{Li}$  is created. The recent high precision measurements of the cosmic baryon density of WMAP can be combined with the Big Bang Nucleosynthesis models to predict the abundances of the light elements. These predictions can be compared to observations in metal poor stars. While the predictions and observations agree quite well for hydrogen and deuterium, the  $7\text{Li}$  abundance differs on the 4 to 5 sigma level.*

*Furthermore a precise determination of  $3\text{He}(a,g)$  is desirable for an improved understanding of the solar interior.*

*In this talk I look at the underlying data used to calculate the  $3\text{He}(a,g)$  reaction. It will be shown that an R-matrix fit can describe all of the modern experimental data. The estimate of the uncertainty on the cross section, as determined from a simultaneous fit of several modern data sets, is also discussed.*

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