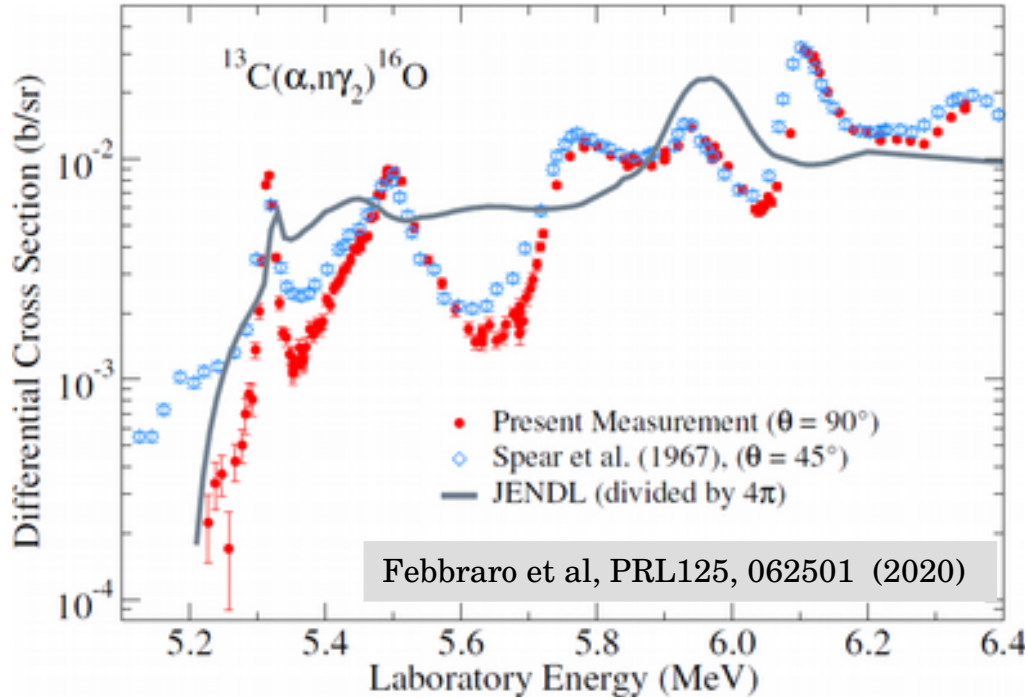


Neutron spectroscopy for the s-process with the ORNL Deuterated Spectroscopic Array (ODeSA)

First star nucleosynthesis: $^{10}\text{B}(\alpha, n)^{13}\text{N}$, $^{11}\text{B}(\alpha, n)^{14}\text{N}$

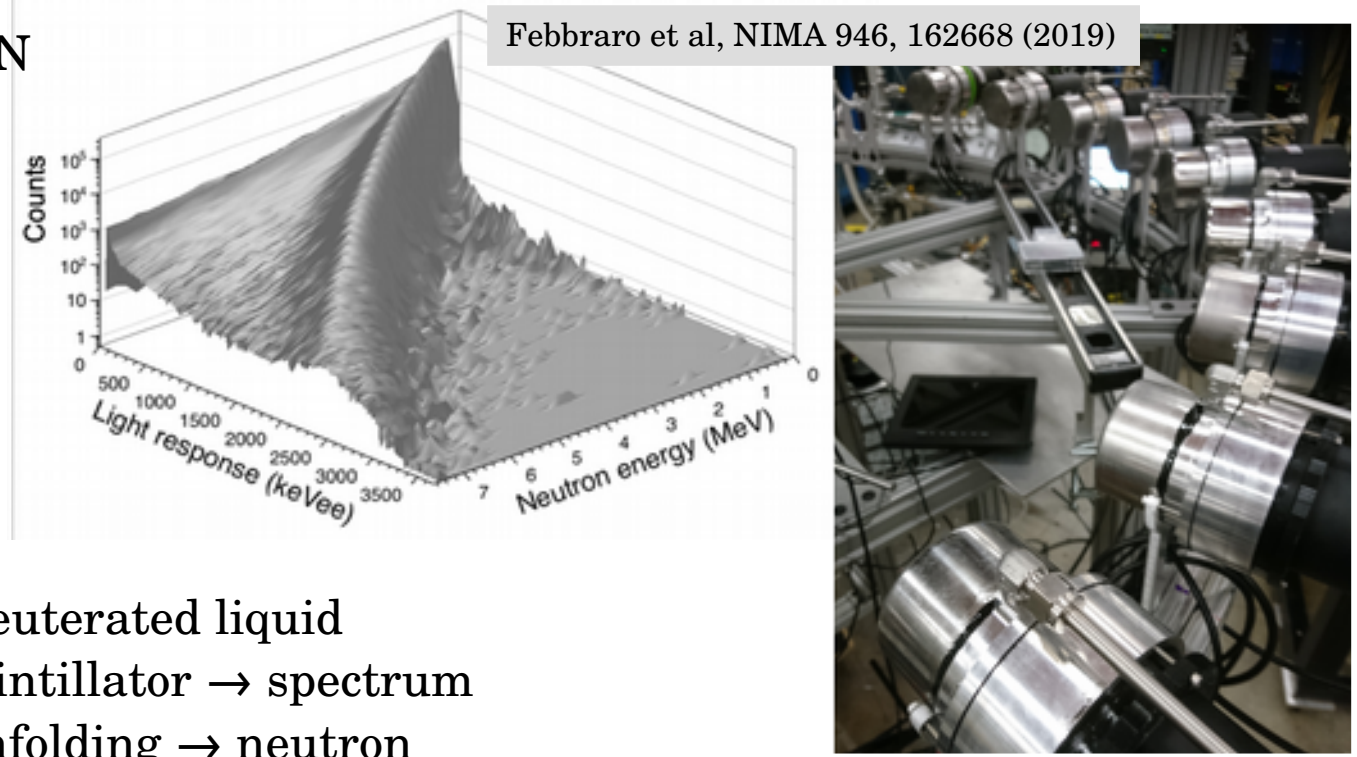
Primary s-process reactions: $^{13}\text{C}(\alpha, n)^{16}\text{O}$ and $^{22}\text{Ne}(\alpha, n)^{25}\text{Mg}$

Secondary s-process reactions: $^{17}\text{O}(\alpha, n)^{20}\text{Ne}$, $^{18}\text{O}(\alpha, n)^{21}\text{Ne}$, $^{25}\text{Mg}(\alpha, n)^{28}\text{Si}$, $^{26}\text{Mg}(\alpha, n)^{29}\text{Si}$



Febbraro et al, PRL125, 062501 (2020)

contact: M. Febbraro (ORNL),
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Febbraro et al, NIMA 946, 162668 (2019)

Deuterated liquid scintillator → spectrum unfolding → neutron spectroscopy without ToF!

Combine with intense alpha beams (ND)

Disentangle contributions from excited levels (^3He counters “blind”)

