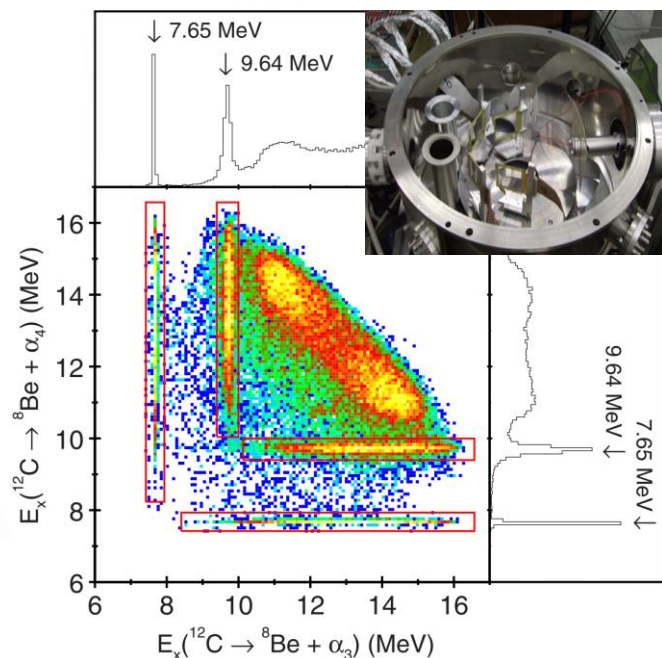
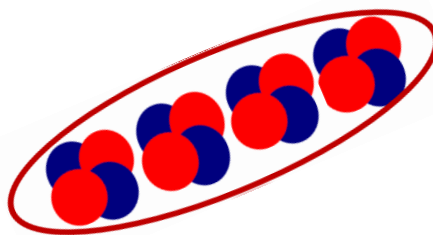
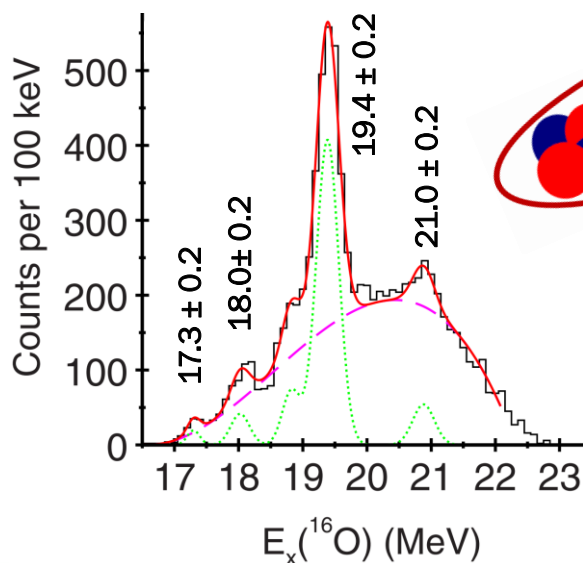


# Alpha clusters in $^{16}\text{O}$



Alpha cluster structures in light nuclei like  $^{16}\text{O}$  are of great interest in both nuclear structure and astrophysics, in particular, the helium burning process in stars. The  $^8\text{Be}+^8\text{Be}$  and  $^{12}\text{C}+\alpha$  breakup states in  $^{16}\text{O}$  have been populated via the  $^{13}\text{C}(^4\text{He},4\alpha)n$  reaction at the University of Notre Dame FN tandem accelerator.



Four-alpha coincident events were measured by an array of four double sided silicon strip detectors. Observation of the cluster states could shed new light on the possible existence of the four- $\alpha$  linear chain structure in  $^{16}\text{O}$  and potentially enhance the helium burning rate in stars .

