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## Characterization of Cluster States in $^{16}\text{O}$ with the $(p,t)$ reaction

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Motivated by several theoretical cluster calculations that predict the existence of the  $0_6^{+}$  state in  $^{16}\text{O}$  located at 15.1 MeV as a very good candidate for the equivalence of the Hoyle state in  $^{12}\text{C}$ , a high resolution measurement of  $^{16}\text{O}$  spectrum in coincidence with the  $^{16}\text{O}$  decay products was proposed using a  $(p,t)$  reaction at 200 MeV and  $0_0^{+}$ . The decay products of the excited  $^{16}\text{O}$  recoil nucleus were detected by means of Double Sided Silicon Detectors and the outgoing tritons were identified in the K600 magnetic spectrometer focal plane. Data were collected with targets containing  $^{18}\text{O}$ ,  $^{16}\text{O}$ ,  $^{12}\text{C}$  and  $^7\text{Li}$ . First results on precise measurement of energy spectra of the corresponding recoil nuclei using the K600 as the master trigger and extracted cross sections will be discussed.

**Level (Hons, MSc, &nbsp; PhD, other)?**

Researcher

**Consider for a student &nbsp; award (Yes / No)?**

No

**Would you like to &nbsp; submit a short paper &nbsp; for the Conference &nbsp; Proceedings (Yes / No)?**

Yes

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