
USING GAMMA DECAY TO STUDY LOW-LYING RESONANCES IN ^{12}C

Oliver S. Kirsebom, Aarhus University, Denmark

The low-lying resonance spectrum of ^{12}C has been the focus of numerous recent studies, both experimental and theoretical. Despite significant progress on the subject many questions still remain unanswered, in particular, concerning the precise structure of the Hoyle state and the existence of rotational and vibrational excitations built upon the Hoyle state [1]. Experimental studies are complicated due to the presence of multiple broad, overlapping and/or interfering resonances. The Aarhus group is pursuing new ways of populating and studying these resonances. Gamma decay from higher-lying states is proving to be a very useful tool to discriminate between resonances of different spins and parities. I will present preliminary results from the $p+^{11}\text{B}$ experiments performed at the Aarhus accelerator laboratory, and discuss a new experiment, scheduled to take place at the ALTO facility at IPN Orsay later this year, where the new PARIS array will be used to measure the $^{11}\text{B}(p,\gamma)$ capture cross section to the Hoyle state as a function of energy.

REFERENCES

[1] M. Freer and H. O. U. Fynbo, Prog. Part. Nucl. Phys. 78, 123 (2014).