



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 166

Type: Oral (Non-Student) / Orale (non-étudiant(e))

Search for the high-spin members of the $\alpha:2n:\alpha$ band in ^{10}Be

Wednesday, 9 June 2021 13:15 (10 minutes)

There is strong evidence that some states in ^{10}Be exhibit a molecular-like $\alpha:2n:\alpha$ configuration. Based on theoretical studies, it appears that the 6.179 MeV 0^+ state in ^{10}Be has a pronounced $\alpha:2n:\alpha$ configuration with an α - α inter-distance of 3.55 fm [Itagaki and Okabe, (2000)]. This is 1.8 times more than the corresponding value for the ^{10}Be ground state. The 2^+ at 7.542 MeV in ^{10}Be is believed to be the next member of this rotational band. The state at 10.2 MeV was identified as a 4^+ member in recent experiments. The algebraic model predicts that the terminating member of this band is the 6^+ state that should be found around 13 MeV. We performed an experiment to search for the 6^+ state in ^{10}Be at around 13 MeV excitation energy in the excitation function for $^6\text{He}+\alpha$ scattering. Stringent limits on the properties of such a state have been established using Monte Carlo methods. The results of this study will be presented.

Primary author: Dr UPADHYAYULA, Sriteja (TRIUMF)

Co-authors: ROGACHEV, Grigory; UBERSEDER, Ethan (Texas A&M University // Cyclotron Institute); Dr HOOKER, Josh; Dr JAYATISSA, Heshani (Argonne National Laboratory); HUNT, Curtis (Texas A & M University); Dr BRIAN, Roeder (Texas A&M University); Dr GOLDBERG, Vladilen (Texas A&M University); VOLYA, Alexander (Florida State University); SAASTAMOINEN, Antti (Texas A&M University); Dr KOSHCHIIY, Evgeniy (Texas A&M University // Cyclotron Institute); Dr BISHOP, Jack (Texas A&M University // Cyclotron Institute)

Presenter: Dr UPADHYAYULA, Sriteja (TRIUMF)

Session Classification: W2-6 Experimental Nuclear Physics I (DNP) / Physique nucléaire expérimentale I (DPN)

Track Classification: Nuclear Physics / Physique nucléaire (DNP-DPN)