Contribution ID: **59** Type: **Talk**

Exploring excited States of Nuclei Through Alpha-particle Decay Correlations

Thursday, 15 June 2017 11:05 (30 minutes)

The study of the nature of nuclei above particle decay thresholds is challenging with the more traditional tool of gamma-ray spectroscopy, since the branching ratio for the electromagnetic decay processes is strongly suppressed. However, it is above these thresholds that the structure may also be most rich. As predicted by Ikeda et al, here nuclei can adopt a structure in which the constituent nucleons may condense out into alpha-particles and where the overall nuclear properties may be described in terms of alpha-particle clusters. These clusters may arrange themselves into geometric shapes, or as predicted in recent times, a Bose condensate of alpha-particles. How the experimental decay patterns may be used to reveal the structure of the states in such nuclei is the subject of this talk.

List of tracks

Resonance decays at low, intermediate and at RHIC and LHC

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Session Classification: Resonance decays at low, intermediate and at RHIC and LHC