Contribution ID: **44** Type: **Oral**

Analysis of excited states in 13C and their cluster structure

Monday, 13 May 2019 15:50 (20 minutes)

Accurate studies on 13C spectroscopy have great impact in the present understanding of the role played by extra-neutrons in stabilizing alpha-cluster structures formed in light nuclei. 13C excited states are in fact the simplest systems that can be formed by adding a neutron to a triple-alpha molecular-like structure. Their spectroscopic properties are therefore a fundamental benchmark for theoretical models aiming at describing clustering in light nuclei. To improve our knowledge of 13C structure, we performed a comprehensive R-matrix fit of α+9Be elastic and inelastic scattering data in the energy range Ex≈3.5 −10 MeV at several angles. To carefully determine the partial decay widths of states above the α-decay threshold we included in the fit procedure also 9Be(α,n0)12C and 9Be(α,n1)12C cross section data taken from the literature. This analysis allows to improve the (poorly known) spectroscopy of excited states in 13C in the Ex≈12-17 MeV region, and tentatively suggests the presence of a large-deformation negative-parity molecular band.

Primary author: Dr LOMBARDO, Ivano (INFN - Sezione di Catania)

Presenter: Dr LOMBARDO, Ivano (INFN - Sezione di Catania)

Session Classification: Session III