

Alpha-clusters configurations in ^{12}C and ^{16}O and alpha-transfer

Wednesday, 13 July 2022 15:55 (20 minutes)

Results obtained in the last few years by the Theoretical Nuclear Physics group in Padova on alpha-cluster models and on nuclear correlations in halo nuclei will be reviewed in this seminar. The algebraic cluster model assumes triangular and tetrahedral configurations of alpha particles for carbon-12 and oxygen-16 respectively. The spectroscopic description of the low-lying states achieved in this model, that is a consequence of the requirement of discrete symmetries, is extremely good. We have made a number of calculations of reactions form factors that have been applied to alpha-transfer reactions obtaining a good agreement with available data, thus corroborating the main hypotheses of the model. We have also speculated about smoking-gun nuclear fluorescence experiment that might shed light on the exact arrangements of alphas in ^{12}C .

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Session Classification: Clustering and shape-phase transitions in nuclei and other physical systems

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