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AUTHOR: Neudachin, V.G.; Orlin, V.N.; Smirnov, Yu.F.

TITLE: Monopole part of the Majorana forces and nucleon quadrupling in light nuclei Report, Thirteenth Annual Conference on Nuclear Spectroscopy held in Kiev 25 Jan to 2 Feb 1963

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TOPIC TAGS: nucleon quadrupling, α cluster, shell model, Majorana forces, Majorana monopole, light nucleus, nucleon coupling, α decay energy, polonium

ABSTRACT: It is known (J.M.Blatt and V.Weisskopf, Theoretical Nuclear Physics, N.Y. 1952; J.P.Elliott and A.M.Lane, Handbuch der Physik, 39, 1957) that in light nuclei Majorana forces are largely responsible for the specific effect of quadrupling or α -clustering, i.e., the following effects: "sawtooth" variation of the nucleon coupling energy as a function of A, exceptionally high location of the lowest level with $T = 1$ in nuclei with $N = Z = 2m$, persistence of LS coupling with $N = Z = 2m$, a relatively low α -particle detachment energy, etc. Interpretation of these phenomena from the standpoint of the α -particle model proved to be unsatisfactory, for, as analysis

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