



Contribution ID : 254

Type : **Poster**

Determination of the radii of states in the 11-14 MeV excitation region in the ^9Be nucleus

Tuesday, 29 November 2022 17:10 (120)

The angular distributions for the 11.28 (7/2+), 11.82 (9/2-), and 13.79 (7/2-) MeV states were obtained and analyzed from the scattering of light particles by the ^9Be nucleus.[1,2]. The MDM method was used to estimate the radii [3]. The resulting diffraction radius of the 11.82 MeV state turned out to be equal to the radius of the ground state. This indicates that the root-mean-square radius of this state is ordinary. For the 11.28 MeV and 13.79 MeV states, the diffraction radii turned out to be increased, which indicates increased root-mean-square radii for these states. On the basis of the obtained radii and certain spin-parity values (rule $J(J+1)$ [4]) of the states 11.82, 11.28, and 13.79, it was possible to assign them to the first, second, and third bands of the ^9Be nucleus, respectively.

[1] A.S. Demyanova et al., EPJ Web of Conferences 66 02026 (2014)

[2] A.S. Demyanova et al., JETP Lett. 104 (5) 289-292 (2016)

[3] A.N. Danilov et al., Phys. Rev. C 80, 054603 (2009)

[4] V.I. Starastsin et al., EPJ A 57, 334 (2021)

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Session Classification : Poster Session

Track Classification : Nuclear physics