Contribution ID: **133** Type: **Oral report**

Microscopic analysis of elastic scattering of one-proton halo nucleus ^{17}F on different mass targets

Monday 20 September 2021 14:50 (25 minutes)

An analysis of cross sections of elastic scattering of ^{17}F on ^{12}C, ^{14}N, ^{58}Ni, and ^{208}Pb nuclei at energy 170 MeV and on ^{208}Pb at various energies is carried out by using the microscopic optical potentials (OPs). The proton and neutron density distributions of the exotic nucleus ^{17}F are computed in the framework of microscopic models. The real part of the OP is calculated by a corresponding folding procedure accounting for the anti-symmetrization effects, while the imaginary part is obtained on the base of the high-energy approximation [1]. In the hybrid model of the optical potential developed and explored in our previous works [2,3] the only free parameters are the depths of the real and imaginary parts of the OPs obtained by fitting the experimental data. A good agreement of the theoretical results with the available experimental data is achieved pointing out clearly to a peripheral character of the scattering.

\bigskip
[1] V. K. Lukyanov, E. V. Zemlyanaya, and K. V. Lukyanov, Phys. At. Nucl. {\bf 69}, 240 (2006); JINR Preprint P4-2004-115, Dubna, 2004.

[2] K. V. Lukyanov {\it et al.}, Eur. Phys. J. A {\bf 33}, 389 (2007).

[3] V. K. Lukyanov {\it et al.}, Phys. Rev. C {\bf 80}, 024609 (2009); Phys. Rev. C {\bf 82}, 024604 (2010); Phys. Rev. C {\bf 88}, 034612 (2013); Phys. Rev. C {\bf 91}, 034606 (2015); Eur. Phys. J. A {\bf 53}, 31 (2017); Phys. Rev. C {\bf 100}, 034602 (2019).

Authors: Prof. ANTONOV, A.N. (INRNE-BAS); Dr KADREV, D.N. (INRNE-BAS); Prof. ZEMLYANAYA, E.V. (JINR); GAIDAROV, Mitko (INRNE-BAS); Dr LUKYANOV, K.V. (JINR); Prof. LUKYANOV, V.K. (JINR)

Presenter: GAIDAROV, Mitko (INRNE-BAS)

Session Classification: Section 2. Experimental and theoretical studies of nuclear reactions

Track Classification: Section 2. Experimental and theoretical studies of nuclear reactions.