



Contribution ID: 16

Type: Oral

Microscopic Analysis of Elastic Scattering of One-Proton Halo Nucleus ^{17}F on Different Mass Targets

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) [1]. 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 antisymmetrization effects, while the imaginary part is obtained on the base of the high-energy approximation [2]. In the hybrid model of the optical potential developed and explored in our previous works [3,4] 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.

References

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Notes

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