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Isospin triplet A=14: search for states with enhanced radii

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This talk is devoted to study of isobar-analogue states 1^- in triplet A=14: ^{14}C-^{14}N-^{14}O. Previously signs of neutron halo in the 1^-, 6.09 MeV state of ^{14}C were obtained by two independent groups. In this article we propose to study neighboring nuclei ^{14}N and ^{14}O using the Modified diffraction model (MDM) method and the method of Asymptotic normalization coefficients (ANC). Methods were applied to experimental differential cross sections of ^{14}C(α,α)^{14}C scattering and reactions ^{13}C(^{3}He,d)^{14}N and ^{14}N(^{3}He,t)^{14}O. MDM and ANC gave practically similar within errors radii for the studied 1^- states: the 6.09 MeV state in ^{14}C – 2.7±0.1 fm, the 8.06 MeV state in ^{14}N – 2.7 ± 0.1 fm, the 5.17 MeV state in ^{14}O – 2.6 ± 0.2 fm. Moreover, the signs of proton halo in the 1^- state of ^{14}N were obtained.

Primary author(s) : Mr. DANILOV, Andrey; Dr. DEMYANOVA, Alla; Prof. OGLOBLIN, Alexey (NRC Kurchatov Institute); STARASTSIN, Viktar (National Research Center «Kurchatov Institute»); Mr. DMITRIEV, Sergey (NRC Kurchatov Institute); Prof. GONCHAROV, Sergey (Lomonosov Moscow State University); Prof. BELYAEVA, Tatyana (Universidad Autónoma del Estado de México); Dr. TRZASKA, Wladislaw (Department of Physics, University of Jyväskylä)

Presenter(s) : Mr. DANILOV, Andrey

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