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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 $^{14}\text{C}(\alpha,\alpha)^{14}\text{C}$ scattering and reactions $^{13}\text{C}({}^3\text{He},d)^{14}\text{N}$ and $^{14}\text{N}({}^3\text{He},t)^{14}\text{O}$. 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.

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