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Neutron density distributions in ^{40,42,44,48}Ca observed via polarized proton elastic scattering at 300MeV JUZO ZENIHIRO, HARU-TAKA SAKAGUCHI, TETSUYA MURAKAMI, YUUSUKE YASUDA, SATORU TERASHIMA, YOHEI NAKATSUGAWA, Department of Physics, Kyoto University, TOSHIMI SUDA, HIROYUKI TAKEDA, TETSUYA OHNISHI, The Institute of Physical and Chemical Research (RIKEN), MASARU YOSOI, Research Center for Nuclear Physics (RCNP), Osaka University, MASATOSHI ITOH, Department of Physics, Tohoku University, MAKOTO UCHIDA, Department of Physics, Tokyo Institute of Technology, HIDETOMO YOSHIDA, Research and Development Center for Higher Education, Kyushu University — Systematic behaviors of neutron densities in 40,42,44,48 Ca have been deduced via proton elastic scattering at $E_p = 300$ MeV. For the deduction we used RIA with medium modified NN interaction and realistic point proton density distributions unfolded from charge distributions. In this work we have taken into account the effect of intrinsic charge distribution inside neutron as well as that of proton, which makes the proton distributions more gradual and the RMS radius larger than the case only proton charge assumed. We have observed that the isotope shift of neutron density distributions due to the occupation of the $1f_{7/2}$ neutron orbit is seen around 3 fm and ⁴⁸Ca has a large neutron skin of ~ 0.2 fm compared with the other three Ca isotopes.

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