

Study of Electric Polarizabilities of Nucleon with a Constituent Quark Model and Pion Meson Cloud

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Abstract: In this work, a subtle role of the pion meson cloud effect on the electric polarizabilities of the proton and neutron is stressed. It is shown that the electric polarizabilities of the proton and neutron, and the difference between the electric polarizabilities of the proton and neutron can be explained by including the pion meson cloud explicitly. However, the magnitude of the estimated mean-square charge radius of the neutron is still far from the measurement.

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Key words: electric polarizability, pion meson cloud, charge radius

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