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Studying Neutral Current Elastic Scattering and the Strange Axial Form Factor in MicroBooNE

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One of the least constrained contributions to the neutral current (NC) elastic neutrino-proton cross section is the strange axial form factor, which represents the strange quark spin contribution to the spin structure of the proton. This becomes the net strange spin contribution, Δs, in the limit when the negative four-momentum transfer squared (Q^2) is zero. The strange axial form factor can be determined by studying NC elastic scattering events in the MicroBooNE detector. MicroBooNE's unique ability to detect low-energy protons is expected to allow the reconstruction of these events with a Q^2 as low as 0.10 GeV^2 and to determine the strange axial form factor in a model-independent approach. We present a selection of neutral current elastic events in a subset of MicroBooNE neutrino data, as well as our plan to extract the strange part of the axial form factor and Δs from this selection in the full data set.

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