PROGRESS ON NEUTRINO-PROTON NEUTRAL-CURRENT SCATTERING IN MICROBOONE

Stephen Pate (for the MicroBooNE Collaboration)
Physics Department, New Mexico State University, Las Cruces, NM, USA

The MicroBooNE Experiment at the Fermi National Accelerator Laboratory, an 89-ton active mass liquid argon time projection chamber, affords a unique opportunity to observe low-Q^2 neutral-current neutrino-proton scattering events. Neutral-current neutrino-proton scattering at $Q^2 < 1$ GeV^2 is dominated by the proton's axial form factor, which can be written as a combination of contributions from the up, down, and strange quarks: $G_A(Q^2) = \frac{1}{2}[-G_A^u(Q^2)+G_A^d(Q^2)+G_A^s(Q^2)]$. The contribution from up and down quarks has been established in past charged-current measurements. The contribution from strange quarks at low Q^2 remains unmeasured; this is of great interest since the strange quark contribution to the proton spin can be determined from the low-Q^2 behavior: $\Delta S = G_A^s(Q^2 = 0)$. MicroBooNE began operating in the Booster Neutrino Beam in October 2015. I will present the status in observing isolated proton tracks in the MicroBooNE detector as a signature for neutral-current neutrino-proton events. The sensitivity of the MicroBooNE experiment for measuring the strange quark contribution to the proton spin will be discussed.