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Charged-current (anti)neutrino scattering cross sections and radiative corrections

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Charged-current quasielastic neutrino scattering is the signal process in neutrino oscillation experiments and requires precise theoretical prediction for the analysis of modern and future experimental data, starting with the nucleon vector and axial-vector coupling constants and axial-vector form factor at higher energies. In this talk, I compare a new MINERvA measurement of this form factor with lattice-QCD calculations and deuterium bubble- chamber data, provide uncertainty projections for future extractions, present recent calculations of radiative corrections to charged-current processes, and investigate the potential of neutrino scattering data on constraining nucleon- and quark-level interactions beyond the Standard Model.

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