

# Invariant amplitudes, unpolarized cross sections, and polarization observables in charged-current elastic neutrino-nucleon scattering

*Saturday 11 November 2023 10:45 (15 minutes)*

The (anti)neutrino-nucleon charged-current elastic scattering cross sections are parametrized by vector and axial form factors at leading order in weak and electromagnetic couplings. On the other hand, radiative corrections in the Standard Model, and potential new physics contributions beyond the Standard Model, can generate additional operators with corresponding invariant amplitudes. We review the definition of these amplitudes in a general framework and study various constraints from existing experimental data. We explore the impact of modern and future cross section measurements, considering both unpolarized cross sections and polarization observables, on constraining these amplitudes. We also discuss the effects of radiative corrections on the observables of interest.

**Primary author:** BORAH, Kaushik

**Co-authors:** BETANCOURT, Minerba; TOMALAK, Oleksandr; HILL, Richard; JUNK, Tom (Fermi National Accelerator Lab. (US))

**Presenter:** BORAH, Kaushik

**Session Classification:** Morning session