

## What measurements of neutrino neutral current events can reveal

We show that neutral current (NC) measurements at neutrino detectors can play a valuable role in the search for new physics. Such measurements have certain intrinsic features and advantages that can fruitfully be combined with the usual well-studied charged lepton detection channels in order to probe the presence of new interactions or new light states. NC measurements provide access to different combinations of CP phases and mixing parameters compared to CC measurements at both long and short baseline experiments. Using the Deep Underground Neutrino Experiment (DUNE) as an illustrative setting, we demonstrate the capability of NC measurements to break degeneracies arising in CC measurements, allowing us, in principle, to distinguish between new physics that violates three flavour unitarity and that which does not. Finally, we show that NC measurements can enable us to restrict new physics parameters that are not easily constrained by CC measurements.

### Session and Location

Wednesday Session, Poster Wall #116 (Auditorium Gallery Left)

### Poster included in proceedings:

yes

**Primary author:** Dr PRAKASH, Suprabh (Instituto de Fisica "Gleb Wataghin" - Unicamp)

**Co-authors:** Dr KAYSER, Boris (Fermilab); Dr GANDHI, Raj (Harish-Chandra Research Institute); Mr ROY, Samiran (Harish-Chandra Research Institute)

**Presenter:** Dr PRAKASH, Suprabh (Instituto de Fisica "Gleb Wataghin" - Unicamp)

**Track Classification:** Poster (participating in poster prize competition)