



Contribution ID: 6

Type: Oral presentation

Can Pions and Weak Magnetism in $2\nu\beta\beta$ Tell Us Something About BSM Physics?

Wednesday, June 25, 2025 10:45 AM (30 minutes)

Corrections to neutrinoless double beta decay observables typically focus on QED interactions or on refining the treatment of nuclear matrix elements. We introduce a new kind: chiral. These corrections involve “Yukawa-like” pion exchanges between the two decaying nuclei, as well as weak force magnetism. We explore how these effects alter decay rates and spectra, and whether they can mimic or suppress beyond the Standard Model observables, such as sterile neutrinos. Furthermore, we relate the neutrinoless double beta decay pion correction to neutrinoless double beta decay nuclear matrix elements, to assess whether constraining the former results in constraining the latter. We conclude by outlining the energy resolution necessary to measure these corrections.

Primary authors: Dr MEREGETTI, Emanuele (Los Alamos National Laboratory); Dr DE VRIES, Jordy (University of Amsterdam, Nikhef); GRAF, Lukas (Charles University in Prague, Nikhef); Mr BOUABID, Ryan (Duke University); EL MORABIT, Saad (University of Amsterdam, Nikhef); CIRIGLIANO, Vincenzo (Los Alamos National Laboratory)

Presenter: EL MORABIT, Saad (University of Amsterdam, Nikhef)

Session Classification: Theory

Track Classification: Theory