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## **Matter effects in the muon to tau neutrino probability ( $P_{\mu\tau}$ ) at long baselines**

*Thursday 7 December 2023 14:10 (20 minutes)*

In the simple two-generation case the probability  $P_{\mu\tau}$  is not affected by interactions of neutrinos in matter. But for three generation case at baselines of the order of 9000 km matter effects become important for this channel. This is a genuine three flavour effect. We study how the presence of non-standard interactions alters the  $P_{\mu\tau}$  probability at these baselines. We observe large deviations from standard matter effect. In particular we find energies and baselines for which the phases governing the non-standard interactions do not play any role. This may facilitate a better determination of NSI parameters if tau neutrinos can be detected.

### **Name of collaboration or list of co-authors**

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