



Poster session 4 – Friday 8 July

P4.001 Effect of new physics in astrophysical neutrino flavour

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Astrophysical neutrinos are powerful tools for investigating the fundamental properties of particle physics through their flavour content. In this Letter, we perform the first general new physics study on ultrahigh energy neutrino flavour content by introducing effective operators. We find that, at the current limits on these operators, new physics terms cause maximal effects on the flavour content; however, the flavour content on the Earth is confined to a region related to the assumed initial flavour content. Furthermore, we conclude that a precise measure of the flavour content on the Earth will provide orders of magnitude improvement on new physics bounds. Finally, we discuss the current best fits of flavour content of the IceCube data and their interplay with new physics scenarios.