Contribution ID: **149** Type: **Parallel talks**

Fermion masses and leptogenesis in SO(10)

Friday 21 July 2023 15:00 (20 minutes)

We consider a minimal non-supersymmetric SO(10) Grand Unified Theory (GUT) model that can reproduce the observed fermionic masses and mixing parameters of the Standard Model. We calculate the scales of spontaneous symmetry breaking from the GUT to the Standard Model gauge group using two-loop renormalisation group equations. This procedure determines the proton decay rate and the scale of U(1)B–L breaking, which generates cosmic strings and the right-handed neutrino mass scales. Consequently, the regions of parameter space where thermal leptogenesis is viable are identified and correlated with the fermion masses and mixing, the neutrinoless double beta decay rate and the proton decay rate. We demonstrate that this framework, which can explain the Standard Model fermion masses and mixing and the observed baryon asymmetry, will be highly constrained by the next generation of gravitational wave detectors and neutrino oscillation experiments which will also constrain the proton lifetime.

Author: MARSILI, LUCA (IPPP, University of Durham)

Presenter: MARSILI, LUCA (IPPP, University of Durham)

Session Classification: Flavour physics: Theory and Experiment

Track Classification: Flavour physics: Theory and Experiment