



## Poster session 3 – Wednesday 6 July

### P3.082 Lepton masses and mixing and lepton number violating processes in the minimal 3-3-1 model

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The problem of understanding the quark and lepton masses, mixing angles and CP violating phases remains one of the most fascinating puzzles in particle physics. After the discovery of a Standard Model like Higgs boson at the LHC, it seems highly plausible that lepton masses, mixing angles and CP phase originate from Yukawa couplings to a Higgs field. However the SM offers absolutely no insight into the origin or nature of these Yukawa couplings. On the other hand we already know the experimentally desired form of the PMNS matrix and the value of the leptons masses. In this context, to a model that is an extension of the standard model, called 331-Model we develop a mathematical routine that allows us to calculate three different solutions to Yukawas, and with this we study the phenomenological consequences of these three solutions in the decays of three bodies for the tau and muon. We show how the lower limit on the vector doubly charged bilepton depends on the values obtained, how the scalar contributions are negligible also because of the values of the Yukawas. As a result, considering that the experimental upper limit for the process muon into three electrons is at present  $<10^{-12}$  the partial contributions to the Br are explicitly showed as function of the mass of the virtual particle  $m_{u--}=m_{y--}=m_{h_{10}}=m_{a_{10}} \equiv m_x$ . The solution 1 demands that  $m_{u--}>51.8$  TeV for the satisfaction of the experimental upper limit, while the solution 2 impose  $m_{u--}>4.59$  TeV, and finally the solution 3 yields  $m_{u--}>3.35$  TeV. Therefore, we can make predictions for the model also showed that the results depend strongly on the values of Yukawas.