

Alessandro Granelli

University of Bologna (UniBO) and INFN

- Post-doc at UniBO, with **Prof. S. Pascoli** on **neutrino physics** and **leptogenesis (LG)**.
- Ph.D. at SISSA with **Prof. S. T. Petcov** on **LG**, with **Prof. P. Ullio** on **dark matter pheno** and **astrophysics**.
- Master in Padua (Italy), with Prof. F. D'Eramo on dark matter pheno.
- Lead Singer and Guitarist in the Italian Progressive Rock Band named **Tacita Intesa**, check it out on Spotify and YouTube...



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



Theory and Phenomenology
of Fundamental Interactions
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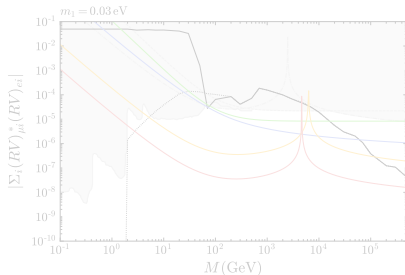
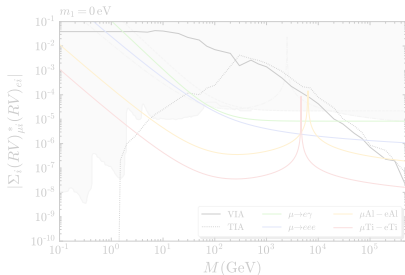


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Testing LG with charged Lepton Flavour Violation (cLFV) searches

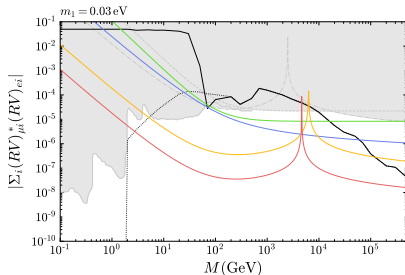
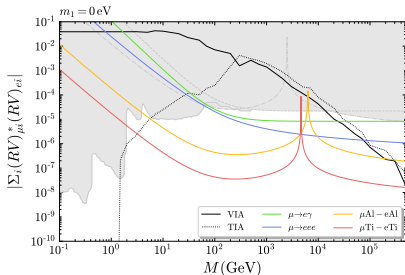
- Searches for $\mu \rightarrow e\gamma$, $\mu \rightarrow eee$ and $\mu - e$ conversion in nuclei:
 - ▶ **Current limits:** $\text{BR}(\mu \rightarrow e\gamma) < 4.2 \times 10^{-13}$ (**MEG**), $\text{BR}(\mu \rightarrow eee) < 1.0 \times 10^{-12}$ (**SINDRUM I**), $\text{CR}(\mu_{22}^{48}\text{Ti} \rightarrow e_{22}^{48}\text{Ti}) < 4.3 \times 10^{-12}$, $\text{CR}(\mu_{79}^{197}\text{Au} \rightarrow e_{79}^{197}\text{Au}) < 7.0 \times 10^{-13}$ (**SINDRUM II**).
 - ▶ **Planned sensitivities:** $\text{BR}(\mu \rightarrow e\gamma) \sim 6 \times 10^{-14}$ (**MEG II**), $\text{BR}(\mu \rightarrow eee) \sim \times 10^{-15}$ (**Mu3e**), $\text{CR}(\mu_{79}^{27}\text{Al} \rightarrow e_{79}^{27}\text{Al}) \sim 6.0 \times 10^{-17}$ (**Mu2e** and **COMET**), $\text{CR}(\mu_{22}^{48}\text{Ti} \rightarrow e_{22}^{48}\text{Ti}) \sim 10^{-18}$ (**PRISM/PRIME**).
- Limits on the parameter space of low-scale LG with 3 quasi-degenerate HNLs:



- A. G., J. Klarić and S. T. Petcov (2206.04342), included in FIPs report (2305.01715). See also K. A. U. Calderón, I. Timiryasov and O. Ruchayskiy (2206.04540).

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Live in Tokyo, October 2019

Thanks for your attention!