

# Searches of lepton-flavour-violating decays of the Higgs boson with the ATLAS detector at the HL-LHC

*Monday, 15 May 2023 17:10 (15 minutes)*

This talk presents a study of the prospects of searches for lepton-flavour-violating decays of the Higgs boson into  $e\tau$  and  $\mu\tau$  final states with  $3000\text{ fb}^{-1}$  of proton-proton collisions at  $\sqrt{s} = 14\text{ TeV}$  using the ATLAS detector at the HL-LHC. The expected HL-LHC results are estimated by extrapolating the recently published ATLAS search in the Run 2 dataset to the HL-LHC conditions, accounting for, among others, the increase in the integrated luminosity and the potential reduction of uncertainties associated with particle reconstruction with the upgraded ATLAS detector. The signatures  $H \rightarrow e\tau$  and  $H \rightarrow \mu\tau$  are treated as independent signals, and two independent approaches of the background estimation are employed and compared.

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**Session Classification:** Young Researchers Talks