

Evidence for the dimuon decay of the Higgs boson at the ATLAS experiment (Lightening Talk)

Friday, 19 December 2025 14:45 (20 minutes)

This talk will present a key advancement from the ATLAS experiment in probing the rare decay of the Higgs boson to a pair of muons ($H \rightarrow \mu\mu$). By analysing the new proton-proton collision data from LHC Run 3 (2022-2024) and combining it with Run 2 data, incorporating several technical improvements, we have performed the most sensitive combined measurement to date. The result provides the first evidence for the $H \rightarrow \mu\mu$ decay with a significance of 3.4σ by ATLAS, marking a significant milestone in directly probing the Yukawa coupling between the Higgs boson and second-generation fermions.

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Session Classification: Higgs & related indirect BSM 3