

## ATLAS Updates on Higgs-Top Yukawa Coupling and Probing CP Violation

*Friday, 17 April 2026 12:00 (25 minutes)*

Measurements of the Higgs boson production in association with top quarks provide a direct probe of the Higgs-top Yukawa coupling, a key parameter in the Standard Model. This talk presents the latest ATLAS results on ttH and tH production using the full Run 2 dataset of  $140 \text{ fb}^{-1}$  at  $\sqrt{s} = 13 \text{ TeV}$ , with a focus on the multi-lepton final state. The measured ttH signal strength is  $\sigma_{\text{ttH}}/\sigma_{\text{SM}} = 0.63^{+0.20}_{-0.19}$ , corresponding to an observed significance of  $3.3\sigma$ . Furthermore, the CP structure of the top-Higgs Yukawa coupling is probed through a combined analysis of ttH and tH events. Values of the CP mixing angle  $|\alpha| > 62^\circ$  are excluded at 68% confidence level, setting important limits on possible CP-odd contributions to the Higgs-top interaction, which is closely connected to the CP violation required to explain the baryon asymmetry of the universe.

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**Session Classification:** Plenary Experiment 1: Collider (Room 567, Chair Man-Qi Ruan)