Contribution ID: **1855** Type: **Oral**

Search for associated production of a Higgs boson with a single top quark at √ = 13 TeV with the ATLAS detector

Monday 27 October 2025 16:30 (15 minutes)

An analysis is presented concerning the search for the associated production of a Higgs boson with a single top quark (tH), a process highly sensitive to the complex phase of the top-quark Yukawa coupling. The analysis uses the full 140 fb^{-1} of ATLAS data at √ = 13 TeV, targeting H⟶bb, WW, ZZ, ττ decays. Advanced multivariate analysis techniques were employed to achieve optimal sensitivity and to separate the tiny tH signal from the large background. The measured signal strength is _ = 8.1 ± 2.6 (stat.) ± 2.0 (syst.). The observed (expected) significance of the tH signal over the background-only hypothesis is 2.8σ (0.4σ). The observed (expected) upper limit on the tH production cross-section is 13.9 (6.1) times the SM prediction at the 95% confidence level. Interpretations for both Standard Model and inverted top-quark Yukawa coupling scenarios also are presented.

Author: ТРОПИНА, Анастасия (JINR)

Presenter: ТРОПИНА, Анастасия (JINR)

Session Classification: Elementary Particle Physics and High-Energy Heavy Ion Physics

Track Classification: Elementary Particle Physics and High-Energy Heavy Ion Physics