

Studies on Higgs Boson Yukawa Couplings and Self-coupling at ATLAS Experiment



Speaker: Prof. Yanlin Liu
Host: Prof. Yunyun Fan
Time: 10:00am, 18th Mar.
Location: Multidisciplinary Building 122
Indico: <https://indico.ihep.ac.cn/event/21822/>
Zoom ID: 96470673766
Password: 658269

Abstract:

Since the discovery of the Higgs boson in 2012, studying its properties and couplings becomes one of the most important sectors at the LHC experiments. This talk will present the latest studies on the Higgs boson Yukawa couplings and self-coupling with 139/fb data collected using the ATLAS detector at 13 TeV. A direct probe of CP property in the top-quark Yukawa coupling using $t\bar{t}H/tH$ events with $H \rightarrow \gamma\gamma$ channel will be presented. Also, as a probe of the Yukawa coupling to the second generation of fermions, the search for $H \rightarrow \mu\mu$ has been performed and the most sensitive results to date will be shown. Besides, the Higgs self-coupling has been directly explored via the production of Higgs boson pairs (HH) and the latest results on $HH \rightarrow b\bar{b}\tau\tau$ as well as HH and single Higgs combination will be reported.

About the speaker:

Dr. Yanlin Liu is a junior faculty at the Shandong University, Qingdao. He obtained his bachelor and doctoral degrees from USTC in 2012 and 2018 respectively. His dissertation won the First-Class Award of "ChenGuang Cup" as well as the Outstanding Doctoral Dissertation of Chinese Academy of Science. From 2018 to 2023, he worked as a postdoctoral research fellow at the University of Michigan. Over the past decade, he has been engaged in research on the ATLAS experiment, making significant contributions to the Higgs physics, test of EWSB, BSM search, and the muon detector upgrade. Currently, he serves as the MC Production Coordinator within the collaboration and leads several competitive analysis teams (including $H \rightarrow \mu\mu$, $HH \rightarrow b\bar{b}\tau\tau$, as well as the search for new physics with dilepton).