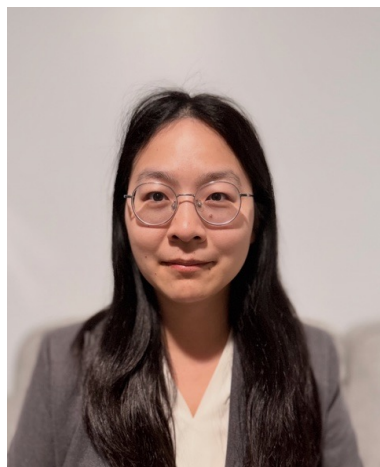


# Boosted Higgs Boson: A Gateway to New Physics



**Speaker:** Dr. Zhi Zheng  
**Host:** Prof. Mingshui Chen  
**Time:** 10:00 am, 20th Apr, 2026  
**Location:** 122 Multidisciplinary Building  
**Indico:** [indico.ihep.ac.cn/event/29340](https://indico.ihep.ac.cn/event/29340)  
**Zoom ID:** 9489 1367 191  
**Password:** 260420

## Abstract:

The Higgs boson, the cornerstone of the Standard Model, was discovered in 2012 at the Large Hadron Collider (LHC), marking a groundbreaking milestone in high-energy physics. Yet, critical questions—such as the origin of electroweak symmetry breaking and the mass hierarchy—remain unanswered. Precision measurements of the Higgs boson and its interactions, especially at high energies, offer one of the most promising pathways to uncover new physics at the LHC. The most favored Higgs boson decay to a bottom-antibottom quark pair ( $H \rightarrow b\bar{b}$ ) is emerging as a key channel for studying Higgs bosons produced with large momentum, where the decay products are reconstructed as a single, large-radius jet. Historically, hadronic final states have faced significant challenges due to contamination from QCD processes, but advancements in jet substructure and tagging techniques have made these analyses viable in the boosted topology. In this talk, I will present the first measurement of Higgs production in association with a vector boson in the fully hadronic ( $qqb\bar{b}$ ) final state.

Looking ahead, I will discuss opportunities to improve measurements of highly energetic Higgs bosons and explore the physics potential of the High Luminosity LHC, the ATLAS detector upgrade, and future collider projects. These advancements will deepen our understanding of Higgs boson properties and their implications for physics beyond the Standard Model, paving the way for discoveries in the years to come.

## About the speaker:

Zhi Zheng, Postdoctoral Fellow at SLAC National Accelerator Laboratory, received her B.S. degree from Wuhan University in 2015 and the Ph.D. degree from the University of Michigan in 2020. She has been conducting research on high-energy physics experiments at SLAC National Accelerator Laboratory since 2021. With long-term participation in the ATLAS experiment at the Large Hadron Collider, her main research interests include top quark physics, Higgs physics, as well as the upgrade and R&D of silicon pixel detectors.