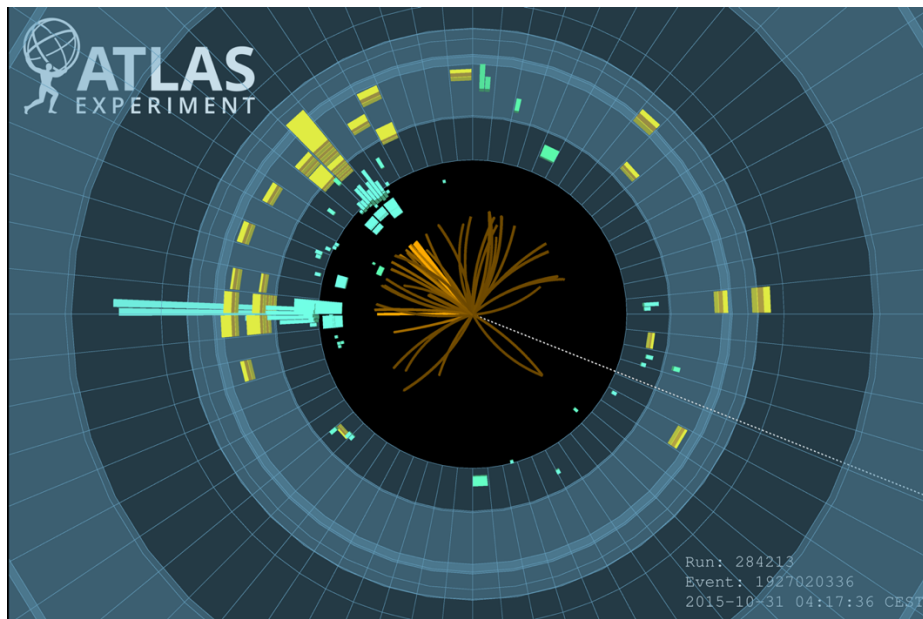


PHYSIKALISCHES SONDERKOLLOQUIUM

AM 13. MAI 2025 UM 14 UHR S.T.
IM GROßEN HÖRSAAL



THE HIGGS BOSON AS A WINDOW INTO THE UNKNOWN GIACINTO PIACQUADIO *STATE UNIVERSITY OF NEW YORK*

The discovery of the Higgs boson by the ATLAS and CMS experiments in 2012 revealed the mechanism by which elementary particles acquire their mass. Yet many fundamental questions remain unanswered: Why are particle masses so vastly different from each other? Why did matter prevail over antimatter in the evolution of the Universe? And what is the nature of dark matter, which accounts for 85% of the mass content of the Universe? At the Large Hadron Collider (LHC), proton-proton collisions at the highest energies and intensities enable ATLAS and CMS to study the Higgs boson with unprecedented precision and to search for clues to these mysteries.

I will highlight several key recent results and present what we expect to achieve with the High-Luminosity LHC. Finally, I will look further ahead and discuss how the next-generation collider currently being planned at CERN, the Future Circular Collider, may open an entire new realm of opportunities, extending both the precision and energy frontiers in our quest to explore the unknown.

AKTUELLE INFORMATIONEN FINDEN SIE HIER: WWW.PHYSIK.UNI-FREIBURG.DE