

T 73: Hauptvorträge (Invited Talks) III

Time: Thursday 9:45–12:30

Location: Tb

Invited Talk

T 73.1 Thu 9:45 Tb

The Higgs boson at the LHC: a glimpse under the peak —
•MATTHIAS SCHRÖDER — Universität Hamburg

In the Standard Model (SM) of particle physics, the Higgs boson is deeply related to the mechanism that creates the masses of elementary particles and, as such, has very characteristic properties, which are different from any other known particle. The large data samples collected during the LHC Run 2 from 2015 to 2018, together with new analysis techniques, allow measurements of Higgs boson production and properties at unprecedented precision. These cover various production and decay channels and include more and more differential measurements. The results play a crucial role in probing the SM and provide a unique window to discover new physics.

In this presentation, I will review the status of Higgs boson measurements by the ATLAS and CMS collaborations and discuss their interpretation within and beyond the SM. Furthermore, I will outline prospects for future measurements at the upcoming LHC Run 3 and at the High-Luminosity LHC.

Coffee Break 30 min**Invited Talk**

T 73.2 Thu 11:00 Tb

No Time to die? Scrutinizing the SM and other Top Stories — •REINHILD YVONNE PETERS — The University of Manchester, Manchester, UK

Technically, the standard model of particle physics has been completed with the discovery of the Higgs boson in 2012. However, the success of the standard model can not hide the fact that new physics beyond the standard model must exist. With the ever-increasing data sample provided by the LHC, precision studies of the standard model are used to challenge its predictions. In my talk, a selection of results from the LHC experiments are presented, in which the standard model is being scrutinised. This includes measurements of the strong and electroweak forces, as well as property measurements of the heaviest known elementary particle, the top quark.

Invited Talk

T 73.3 Thu 11:45 Tb

New detector developments: The next challenges — •ERIKA GARUTTI — Institut für Experimentalphysik, Universität Hamburg, Luruper Chaussee 149, 22761 Hamburg, Deutschland

Progress in experimental high energy physics crucially depends on advances in detector technologies. Ahead of us is an exciting decade for fundamental research on detectors to fully exploit the possibilities offered by future facilities.

What are the demands of the next generation detector systems? What are the challenges we need to solve? And what are the emerging ideas for novel detectors? I will present recent developments and trends, with a primary focus on accelerator-based experiments. Applications in other fields will also be discussed.