Precision Physics, Fundamental Interactions and Structure of Matter: Challenging the Standard Model at the Intensity Frontier

Prof. Dr. Matthias Neubert

Institut für Physik, Johannes-Gutenberg-Universität, Mainz

The long-anticipated discovery of a Higgs-like boson at the CERN Large Hadron Collider in July 2012 has been a milestone for elementary-particle physics. Yet, searches for new particles beyond those contained in the Standard Model have so far not led to new insights. Whatever Nature has prepared for us to discover, she hides it very well. Indirect searches for new physics, combining precision measurements at high luminosities with accurate theoretical calculations, therefore remain of crucial importance. I will discuss several examples of such searches, including Higgs physics, rare flavor-changing processes, electroweak precision tests, and searches for new interactions.