Experimental Physics Division Seminar

Institute of High Energy Physics, CAS

Break and Butter Physics - Or why we did not find axion-like particles, but might discover gravitational waves instead

Speaker: Prof. Dr. Matthias Schott

Host: Prof. Joao Pedro Barreiro Guimaraes Da Costa

Time: Sep. 4, 10:00 am

Location: Multidisciplinary building 122

Indico: https://indico.ihep.ac.cn/event/23328/

Zoom: https://us02web.zoom.us/j/83872624838?pwd=ZXAUVPnilAyUqTX6gvnXMNsBrhBzi1.1
Password: 828665

Abstract:

The field of axion physics has garnered significant attention in recent years. This is not only due to the absence of evidence for new heavy elementary particles, but also because the category of axion-like particles could elegantly account for several of our key observations, such as dark matter. In this presentation, I will provide an overview of the ongoing and forthcoming experimental endeavors aimed at detecting axions and, more broadly, axion-like particles, with a particular emphasis on searches conducted at the LHC. While we have not yet discovered any evidence of axion-like particles, these experiments may enable us to explore high-frequency gravitational waves, which will also be briefly discussed.

About the speaker:

Prof. Dr. Matthias Schott completed his PhD in Experimental High Energy Physics on the Atlas experiment at the University of Ludwig-Maximilian-University, Munich/Germany and CERN, Geneva/ Switzerland in 2004. Following his PhD, he worked ask leader of the muon software simulation group as a postdoc at Ludwig-Maximilian-University, Munich/Germany and CERN, Geneva/ Switzerland for one year. From 2008 until 2012, he served as a CERN research fellow and research staff at CERN Switzerland. From 2012/13 - 2017, he has been Emmy-Noether Research Group Leader at Uni. Mainz, Germany and worked on the Precision Measurement of the W Boson Mass at LHC. From 2013 to 2023, He works as Professor at Uni. Mainz, Germany. Since 2024, Prof. Dr. Matthias Schott becomes W3 Professor (Full professor) at Uni. Bonn, Germany. He is interested in various topics in particle physics but also beyond. His research focus was mainly on electroweak precision measurements in particular the measurement of the W boson mass at the ATLAS experiment, but extended towards searches for axion-like particles and detector developments. He is now involved also in the study of non-perturbative effects within Quantum Chromodynamics, the study of heavy ion collisions as well as lab-based searches for gravitational waves. This is complemented by the development of agent based models and deep learning algorithms in the context of fundamental physics.