

## Precision Measurement of the W Boson Mass at the LHC (continuation)

Initiative: Lichtenberg - Professuren

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With the discovery of the Higgs Boson in 2012 at the Large Hadron Collider, the last outstanding prediction of our current understanding of particle physics was finally confirmed. However, we are convinced that this cannot be the end of the story, since there are many hints to theories beyond. Precision measurements of the mass of three fundamental particles, namely the W boson, the top quark and the Higgs boson, allow us to test and constrain such new ideas. Therefore, the primary goal of the professorship is to establish a dedicated research activity, focusing on precision measurements of electroweak gauge bosons at high-energy particle colliders. Special focus in the first years is placed on the determination of the W Boson mass, aiming at a relative precision of 0.01% and superseding the current best measurements by several factors. The measurement will be based on the analysis of more than ten billion recorded proton-proton collisions at the world's largest particle accelerator, the Large Hadron Collider. This requires innovative approaches in large-scale data-analyses, newly developed techniques to constrain theoretical and experimental uncertainties and also the development of new detector components.

### Projektbeteiligte

#### **Prof. Dr. Matthias Schott**

Universität Mainz

Fachbereich Physik, Mathematik und Informatik

Institut für Physik

Experimentelle Teilchen-

und Astroteilchenphysik (ETAP)

Mainz