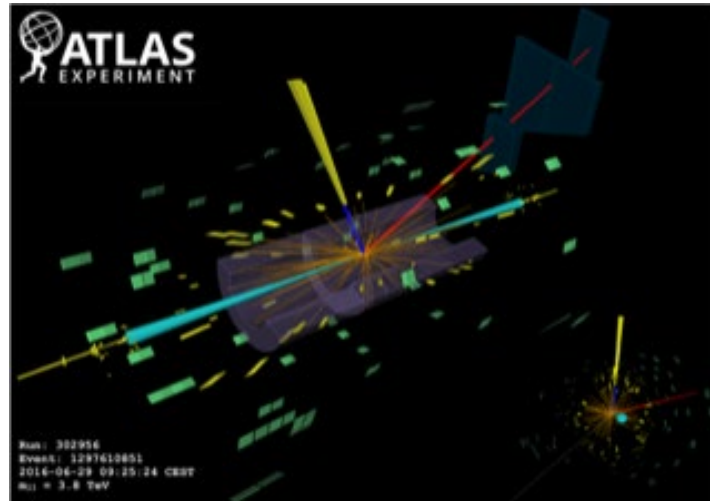


# PHYSIKALISCHES KOLLOQUIUM

AM 18. DEZEMBER 2023 UM 17 UHR C.T.  
IM GROßEN HÖRSAAL



## MEASUREMENT OF MULTIBOSON PRODUCTION AT THE LHC: UNDERSTANDING THE GAUGE STRUCTURE OF THE ELECTROWEAK INTERACTION

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The Standard Model of particle physics provides an accurate description for all fundamental interactions except gravity. The unified description of the electromagnetic and weak forces is given by the electroweak interaction. The electromagnetic and weak interactions emerge as a result of the electroweak symmetry breaking, explained by the Higgs mechanism, which provides masses to quarks and leptons, as well as W and Z bosons. A fundamental aspect of this unified description is the self-coupling of electroweak bosons, described by the gauge structure of the electroweak interaction. At the LHC, these phenomena can be studied by measuring the production of multiple electroweak bosons in proton-proton collisions.

In this talk, after an introduction to the electroweak interaction, a discussion of multiboson measurements at the LHC is provided, including an overview of relevant experimental techniques and most recent results. Also shown is how these measurements are used to search for effects beyond the Standard Model, such as new particles or interactions affecting the self-couplings of electroweak bosons, or additional Higgs bosons.

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