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PHYSIKALISCHES KOLLOQUIUM

ANTRITTSVORLESUNG

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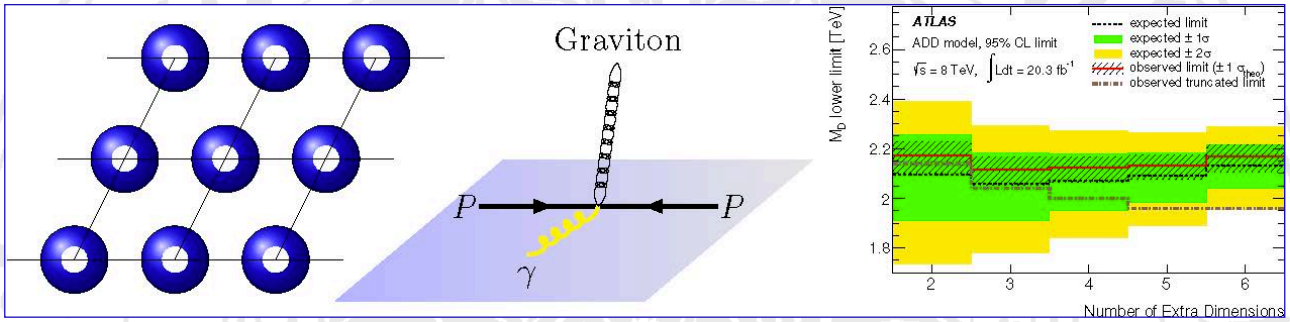
IM GROßEN HÖRSAAL



PARTICLE PHYSICS WITH EXTRA SPACE DIMENSIONS

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The idea of additional "compact" space dimensions was introduced to physics in the 1920s by Kaluza and Klein in an attempt to unify gravity and electromagnetism and is a crucial feature of string theory. In these theories, the extra dimensions usually have been assumed to be "compactified" on a length scale near the Planck length, so they would be inaccessible to experiments.

More recently, extra dimensions gained popularity as a possibility to address the hierarchy of the scale of gravity to the scale of the weak interactions, where extra dimensions as large as a millimeter have been considered.
Subsequently, extra dimensions have been used in several proposed extensions of the standard model of particle physics.

In this talk, I will discuss the basic ideas of compact extra dimensions and their possible experimental signatures. I will give examples for their application in particle physics models and present experimental constraints, including results from the first run of the CERN Large Hadron Collider.