

SEMINAR TEILCHENPHYSIK

Thema

First observation and
branching fraction
measurement of the
 $\Sigma^+ \rightarrow p\mu^+\mu^-$ decay at LHCb

Abstract

The $\Sigma^+ \rightarrow p\mu^+\mu^-$ decay is observed for the first time at the LHCb experiment using proton-proton collision data corresponding to an integrated luminosity of 5.4 fb^{-1} at a centre-of-mass energy of 13 TeV. This flavour-changing neutral current process is highly suppressed in the Standard Model and sensitive to potential contributions from physics beyond the Standard Model, such as new mediators or short-distance dynamics. In particular the HyperCP experiment years ago presented an evidence of this decay with a hint of a possible unknown intermediate particle. This was excluded by LHCb already in 2018. The new measurement presents a highly significant observation and a measurement of its integrated branching fraction and dimuon invariant mass distribution. This is the rarest baryon decay ever observed.

Vortragender

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Zeit

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im Auftrag:

Dr. Maik Becker