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Search for the rare decay $\Omega_b^- \to \Omega^- \mu^- \mu^+$ at the LHCb experiment

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Rare decays of heavy-quark hadrons provide a powerful way to probe indirectly for presence of phenomena beyond the Standard Model of particle physics.
At the LHCb experiment several $b \to s\ell\ell$ transitions, such as the rare decays $B \to K\ell\ell$ or $B \to K^*\ell\ell$, have been studied. They show tensions towards the Standard Model predictions in several observables, such as lepton universality ratios (R_K, R_{K^*}) or angular observables. So far most of the measurements have been focused on mesons and the Λ_b baryon. To improve the understanding of the anomalies and widen the available knowledge, it is crucial to study $b \to s\ell\ell$ transitions for other weakly decaying baryons as well.

Therefore, the primary aim of the presented analysis is to observe the decay $\Omega_b^- \to \Omega^- \mu^- \mu^+$. If successful, the branching ratio relative to the decay $\Omega_b^- \to \Omega^- J/\Psi(\to \mu^- \mu^+)$ will be measured.

The used data set corresponds to an integrated luminosity of 9 fb^{-1}, which has been collected with the LHCb experiment from 2011 to 2018. In this talk the current status of the analysis is presented.

Category

Particle / Astroparticle / Cosmology (Experiment)

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