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Search for higher mass resonances via KK decay channel in pp collisions with ALICE at the LHC

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The quark model has proven successful in describing the basic building blocks of strongly interacting particles in the Standard Model, where hadronic states consist of quarks and gluons. At the same time, Lattice QCD predicts the possibility of glueball candidates in the mass range $1550\text{--}1750\text{ MeV}/c^2$, which have never been observed.

The experimental search for the existence of mesons with no quark content is both interesting and challenging as the glueball is very likely to mix with surrounding quark-antiquark scalar meson states with the same quantum numbers.

The large statistics data sample collected by ALICE in pp collisions at the highest LHC center of mass energy provides an opportunity to measure high mass resonances, whose characteristics and internal structure are still unknown. Measurements help us understanding the nature of particles as well as their formation mechanism.

We report on the measurements of invariant mass distributions of $K_S^0 K_S^0$ and $K^+ K^-$ pairs in pp collisions at $\sqrt{s} = 13\text{ TeV}$ using the ALICE detector at central rapidity. We will discuss the structure of the invariant mass distributions and perspectives for the search of glueball states.

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