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Feasibility study for the K_1 measurement in pp collisions with ALICE

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Measuring chiral partners, such as K_1 and K^* mesons, whose vacuum widths are less than 100 MeV, is suitable for investigating chiral symmetry restoration in heavy-ion collisions.

According to a recent theoretical calculation, the K_1/K^* ratio in heavy-ion collisions is predicted to be substantially larger than the value obtained using the statistical hadronisation model.

By exploring the K_1/K^* ratio as a function of multiplicity across different collision systems, ranging from pp to central heavy-ion collisions, valuable insights into the effects of chiral symmetry restoration can be obtained.

However, K_1 meson has not been measured in hadron-hadron collisions yet.

The ALICE detector has remarkable particle identification capabilities, thereby enabling the measurement of the K_1 meson through its hadronic decay channels like $K_1^- \rightarrow \rho^0 K^-$ and $K_1^- \rightarrow \pi^- K^{*0}$.

In this poster, the feasibility study of the K_1 measurement in pp collisions with ALICE is presented.

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