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Studies of ϕ-meson production at LHCb

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The ϕ meson is a unique probe of strange quark dynamics in high-energy nuclear collisions. The ϕ meson's mass lies at the threshold between perturbative and nonperturbative QCD. Consequently, ϕ production provides sensitivity to both regimes. In heavy-ion collisions, ϕ-meson production is senstive to strange-quark coalescence in quark-gluon plasma. The ϕ meson's net-zero strangeness means that ϕ production measurements can help disentangle the physical mechanisms behind strangeness enhancement in high-energy hadron and nucleaer collisions. The LHCb detector's hadron identification capabilities allow for precise studies of ϕ meson production in nuclear collisions. In addition, the SMOG system allows LHCb to study ϕ production in fixed-target collisions. New measurements of ϕ production in both collider and fixed-target configurations will be presented.

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