

Abstract Submitted  
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**Study of proton-kaon correlations in heavy-ion collisions**<sup>1</sup> RUNZE ZHAO, UCLA, STAR COLLABORATION — The proton-kaon (p-K<sup>+</sup>, p-K<sup>-</sup>, antiproton-K<sup>+</sup> and antiproton-K<sup>-</sup>) correlations can be sensitive to several physics topics in heavy-ion collisions. The same-charge p-K correlation could be sensitive to a possible formation of penta-quark candidates with quark contents (uudu-sbar). The opposite-charge p-K correlation measurement could be sensitive to the formation of Lambda(1520) and Lambda(1405). In particular, the Lambda(1405) was suggested by recent Lattice QCD calculations [1] as a molecular proton-kaon state. The mass of Lambda(1405) is below the p-K threshold, and its possible coalescence formation from p-K could deplete the p-K correlation at small two-particle relative momenta. We will present the status and further physics implications of p-K correlations from Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV at the STAR experiment.

[1] J.M.M. Hall et al, Phys Rev Lett. 114(2015)132002

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