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## $\phi$ meson measurement in Cu+Au collisions at $\sqrt{s_{NN}} = 200$ GeV with the PHENIX Muon Arms at RHIC

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A major objective in nuclear physics is to quantify and characterize the hot and dense state of strongly interacting matter formed in high-energy heavy-ion collisions. The  $\phi$  meson is an excellent probe for studying this deconfined state of nuclear matter due to its very short lifetime, and the absence of strong interactions between muons and the surrounding hot hadronic matter makes the  $\phi$  to dimuon decay channel particularly interesting. Since the  $\phi$  meson is composed of a strange and antistrange quark, its nuclear modification in heavy-ion collisions can be used to study strangeness enhancement in-medium. Additionally, the rapidity dependence of  $\phi$  production in asymmetric heavy-ion collisions provides a unique means of accessing different mixtures of initial and final state effects. In this poster, we present the measurement of  $\phi$  meson production and nuclear modification in asymmetric Cu+Au heavy-ion collisions at  $\sqrt{s_{NN}} = 200$  GeV at both forward (Cu-going direction) and backward (Au-going direction) rapidities.

### On behalf of collaboration:

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