

1 Directed flow of  $\phi$  mesons in Au+Au collisions at the second  
2 phase of beam energy scan (BES-II) program from STAR

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6 The  $\phi$  meson is composed of strange quarks ( $s\bar{s}$ ) and has a small hadronic  
7 interaction cross-section, which reduces the influence of late stage rescattering  
8 in heavy-ion collisions [1,2]. Thus the directed flow ( $v_1$ ) of  $\phi$  mesons  
9 is sensitive to the early stages of the collisions and is an important observable  
10 for the study of QCD phase diagram at RHIC. In this talk, we will  
11 present measurements of directed flow of  $\phi$  mesons in Au+Au collisions  
12 at  $\sqrt{s_{NN}} = 3, 7.2, \text{ and } 19.6$  GeV from the second phase of RHIC beam  
13 energy scan (BES-II) program.  $\phi$  mesons are reconstructed through the  
14 decay channel  $\phi \rightarrow K^+ + K^-$ . We will compare our new results with the  
15 BES-I results [3,4].

16 **References**

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