

1 **STAR measurements of charge dependent directed flow in**
2 **Au+Au collisions at $\sqrt{s_{NN}} = 27$ GeV**

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6 Directed flow (v_1) represents the collective sideward motion of particles and
7 is sensitive to early stage dynamics in heavy-ion collisions. The v_1 difference
8 between positively and negatively charged particles has been hypothesized from
9 such dynamics via transported quarks and electromagnetic forces. We report
10 the centrality dependence of the slope of v_1 with respect to rapidity ($\frac{dv_1}{dy}$) for
11 π^\pm, K^\pm, p , and \bar{p} using the data from Au+Au collisions at $\sqrt{s_{NN}} = 27$ GeV
12 collected by the STAR experiment in 2011 and 2018. The $\frac{dv_1}{dy}$ differences be-
13 tween K^+ and K^- , and between p and \bar{p} , are found to be positive in central
14 collisions, indicating possible contributions of transported quarks, and decrease
15 to negative values in peripheral collisions. The negative values would naturally
16 arise in a scenario with Faraday and/or Coulomb interactions. We will compare
17 our results with theoretical models and discuss implications on different early
18 dynamics.