

1 Elliptic flow measurements of strange and multi-strange hadrons 2 in isobar collisions at RHIC-STAR

3 Vipul Bairathi (for the STAR collaboration)

4 *Instituto de Alta Investigación, Universidad de Tarapacá, Chile*

5 Abstract

6 Data from Isobar collisions, ${}^{96}_{44}\text{Ru}+{}^{96}_{44}\text{Ru}$ and ${}^{96}_{40}\text{Zr}+{}^{96}_{40}\text{Zr}$, at $\sqrt{s_{\text{NN}}} = 200$ GeV have been
7 collected by the STAR experiment at RHIC. Anisotropic flow is an important tool to understand
8 properties of the Quark-Gluon Plasma. Elliptic flow (v_2) is the second-order coefficient in the
9 Fourier expansion of the azimuthal angle distribution of produced particles with respect to the
10 reaction plane. Elliptic flow of charged hadrons has been measured in the isobar collisions at $\sqrt{s_{\text{NN}}}$
11 $= 200$ GeV. The magnitude of v_2 shows difference between the two isobar collisions despite the
12 same nucleon number. This indicates a difference in nuclear structure and deformation between
13 these nuclei. The v_2 measurements of the strange and multi-strange hadrons are excellent probes
14 for understanding these initial state anisotropies of the medium produced in these collisions,
15 owing to their smaller hadronic cross-section compared to light hadrons.

16 In this talk, we will report measurements of elliptic flow of K_s^0 , Λ , $\bar{\Lambda}$, ϕ , Ξ^- , $\bar{\Xi}^+$, and $\Omega^- + \bar{\Omega}^+$
17 at mid-rapidity for Ru+Ru and Zr+Zr collisions at $\sqrt{s_{\text{NN}}} = 200$ GeV. The transverse momentum
18 (p_T) dependence of v_2 for minimum bias collisions and various centrality intervals will be shown.
19 The p_T -integrated v_2 of these strange and multi-strange hadrons will also be shown. System size
20 dependence of v_2 will be investigated by comparing the results in isobar collisions with those
21 from Cu+Cu, Au+Au, and U+U collisions. The number of constituent quark (NCQ) scaling for
22 these strange hadrons will also be tested. Experimental data will be compared with transport
23 model calculations to provide insight into the nuclear structure of the isobars.