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Softening of the kaon spectra in 1.9A GeV nucleus-nucleus collisions by $\phi(1020)$ production and decay

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$\phi(1020)$ mesons emitted from Ni+Ni and Al+Al collisions at the beam kinetic energy of 1.9A GeV were investigated by the FOPI Collaboration [1,2]. Significantly larger data sample was obtained compared to our previous measurements [3]. Basic parameters of $\phi(1020)$ emission were obtained from kinetic energy distribution. Our results are close to that obtained by the HADES Collaboration at similar beam energy [4]. As a result of the dominant ϕ meson decay to $K+K^-$ pair [5], the kinematic spectra of K^- receive a considerable feeding. We show that this contribution clearly softens the K^- spectra. In consequence, a considerable part of the gap between the inverse slopes of K^- and K^+ , that was observed for most of the colliding systems at similar beam energies [6], can be explained by the influence of ϕ mesons to the K^- spectra. (K. Piasecki for the FOPI Collaboration)

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