**A SPECIFIC HEAT OF NUCLEAR MEDIUM**

**PROBED BY KS0 MESONS PRODUCED**

**IN AU+AU COLLISIONS AT RHIC**

M. V. Tokarev1, I. Zborovský2

*1 Joint Institute for Nuclear Research, Dubna, Russia; 2 Nuclear Physics Institute,*

*Academy of Sciences of the Czech Republic, Řež, Czech Republic*

E-mail: tokarev@jinr.ru

The data [1] on spectra of KS0 mesons measured by the STAR Collaboration in Au+Au collisions at various centralities characterized by different multiplicity densities of negative particles were analyzed in the z-scaling approach [2,3]. The transverse momentum distributions obtained in the BES-I program at RHIC were accumulated in seven centrality classes from the most central 0-5% to peripheral 60-80% collisions in the rapidity range |y|<0.5. These data and the earlier STAR data at √sNN = 62, 130 and 200 GeV allow us a detail study of the energy and centrality dependence of KS0-meson production in a wide range of √sNN =7.7–200 GeV.

The scaling function ψ(z) was constructed and the self-similarity of KS0-meson production was confirmed. It was found that the model parameter cAuAu interpreted as a specific heat of produced medium depends on collision energy. The scaling behavior is consistent with an abrupt decrease of cAuAu from the value of 0.16 at √sNN =7.7 and 11.5 GeV to about 0.09 at the top RHIC energy. At √sNN=39 GeV, a kink in the significant drop of this parameter is observed, as well as an indication of its flattening at higher √sNN. The non-trivial dependence of cAuAu on the collision energy obtained from the z-scaling of KS0-meson production shows that the strange probe is much more sensitive to properties of nuclear medium than a non-identified negative hadron [3]. The irregularities in the behavior of the specific heat parameter cAuAu could indicate existence of a phase transition in nuclear matter.

1. J. Adam et al. (STAR Collaboration), Phys. Rev. C 102, 034909 (2020).

2. M. Tokarev et al., Phys. Part. Nucl. 51, 141 (2020).

3. M. Tokarev, A. Kechechyan, and I. Zborovský, Nucl. Phys. A 993, 121646 (2020).