## WPCF 2023 - XVI Workshop on Particle Correlations and Femtoscopy & IV Resonance Workshop 2023



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Type: Invited

## Femtoscopy with Lévy sources at NA61/SHINE

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One of the most important goals of NA61/SHINE is to investigate and

understand the phase structures of hadronic matter. The investigation of the phase-diagram can be achieved by varying the beam momentum (13A-150(8)A GeV/c) and by changing the collision system (p+p, p+Pb, Be+Be, Ar+Sc, Xe+La, Pb+Pb). This method enables to perform a two-dimensional scan of the phase diagram of QCD. Investigating femtoscopic correlations are related to the critical exponent  $\eta$ , describing the spatial coordinates. The search in the collisions reveals the properties of sQGP and possible signs of the critical endpoint.

The recent measurements of femtoscopic correlations at NA61/SHINE, using small and intermediate systems, unravel that the shape of the article emitting source is not Gaussian. The analysis of measurements is based on alpha-stable symmetric L\'evy sources, and we discuss the average pair transverse mass dependence of the source parameters. One of the parameters, the L\'evy exponent  $\alpha$ , is of particularly importance. It describes the shape of the source, which, in the vicinity of the critical point of the phase diagram, may be related to the critical exponent  $\eta$ . Its measurement hence may contribute to the search for and characterization of the critical endpoint of the phase diagram.

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