

1 **Dynamics of particle emission probed by femtoscopic**  
2 **correlations in the STAR experiment**

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5 One of methods to study the properties of hot and dense nuclear matter  
6 created in high-energy nuclear collisions is femtoscopic measurements. This  
7 method provides information about space-time characteristics of the particle  
8 emission region, which has a size and lifetime of the order of  $10^{-15}$  m and  
9  $10^{-23}$  s, respectively. From non-identical particle correlations, one can obtain  
10 information about asymmetry in the emission process between those two  
11 kinds of particles. Such an emission asymmetry gives knowledge of which  
12 type of particles, on average, are emitted earlier and from which region of  
13 the source. Using different combinations of pion, kaon, and proton pairs, one  
14 can obtain complete knowledge on geometric and dynamic (times of emission)  
15 properties of the particle emitting source. Such investigation could provide  
16 information about differences between the emission of light mesons (pions),  
17 strange mesons (kaons), and baryons (protons).

18 In this poster, the STAR results on femtoscopic observables of various  
19 particle combinations of pions, kaons, and protons from Au+Au collisions at  
20 Beam Energy Scan program will be presented.