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Femtoscopic in MPD experiment

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Heay Ion Collsion (HIC) are used for study properties of matter that existed at early stage of the universe. One of main topics of those studies is structure of phase diargram of strongly interactin matter, different parts of this diagram can be studied by collisions of heavy ions with different energies. Such measurements will be also done in MPD (Multi-Purpose Detector) in NICA facility with is now under construction in Dubna. One of method used in analysys of HIC is femtoscopy, this method uses two-particle correlations to obtain information about space-time evolution of source of the particles. As part of preparations for MPD experiment some analysis with simulated data where performed. Three sets of simulations has been made, with and without viscosity of bulk dense matter, and with different type of phase transtion from Quark Gluon Plasma to hadronic matter - one of most interesting problems that will be studied by using MPD. Those analysis shown that system that creates particles during collision lives longer when first order phase transition occurs what was expected by theorist, however standard femtoscopic measurements are not suitable tool for study such effects as it was expected. It's mean that new methods or combining more observables toghether must be used like imaging methods.

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