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Charmed Mesons Production in Heavy Ion Collisions

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Charmed mesons serve as an excellent probe in the strongly interacting medium created during heavy ion collisions. This medium is called the quark-gluon plasma and it is an object of great interest due to its connection to the early stages of the Universe. The charmed mesons, such as the $D^{\pm}$, are created during the hard scattering part of the collision and therefore experience the entire evolution of the system. The results shown in this thesis, confirming the conclusions of earlier measurements, were made possible using the newly installed Heavy Flavor Tracker at the STAR experiment. This detector enables unprecedented accuracy in the reconstruction of secondary vertices, that occur as a result of charmed meson decay into daughter particles. Precise reconstruction of secondary vertices allows for higher efficiency of the charmed meson yield measurements in heavy ion collisions.

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