

Track reconstruction in the inhomogeneous magnetic field for Vertex Detector of NA61/SHINE experiment at CERN SPS

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The heavy-ion programme of the NA61/SHINE experiment at CERN SPS is expanding to allow precise measurements of exotic particles with short lifetime. Vertex Detector for open charm measurements at the SPS is being constructed by the NA61/SHINE Collaboration to meet the challenges of high spatial resolution of secondary vertices and efficiency of track registration. This task is solved by the application of the coordinate sensitive Si-sensor chips in CMOS technology with extremely low material budget in the new Vertex Detector.

A small-acceptance version of the Vertex Detector is being tested this year, later it will be expanded to a large-acceptance version. Simulation studies will be presented. A method of track reconstruction in the inhomogeneous magnetic field for the Vertex Detector was developed and implemented. Numerical calculations show the possibility of high precision measurements in heavy ion collisions of strange and multi strange particles, as well as other heavy flavours, like charmed particles.

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