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The PANDA Luminosity Detector

The PANDA experiment will be built at the new accelerator facility FAIR in Darmstadt (Germany). It is optimized for hadron spectroscopy especially in the charm sector. Main topics of the PANDA physics program are the search for new and predicted states and the precise measurement of the line shape of new and already discovered resonances, e.g. the $X(3872)$. This will be done by using the energy scan method for measuring the line shape very precisely and by the determination of the quantum numbers. Crucial for these measurements is the precise determination of the luminosity at each energy point for normalization of the data taken.

For the measurement of the luminosity, elastically scattered antiprotons at extreme forward angles will be used in the angular range of 3.5 to 8 mrad. The very precise determination of the scattering angles of the antiprotons and the separation of the scattered antiprotons from inelastic background reactions are only two of the challenges of this detector system. The luminosity detector will use 4 planes of HV-MAPS (High Voltage Monolithic Active Pixel Sensors) for the reconstruction of the tracks. The active area of the detector extends from 3.5 to 10 cm from the beam axis. The whole detector system will be operated in vacuum in order to reduce the systematic uncertainty due to multiple scattering.

The design and current status of the PANDA luminosity detector will be presented.

quote your primary experiment

Luminositydetector PANDA FAIR

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