WA93 - Spectrometer for Correlations between Photons and Hadrons

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Physics Goals:	Particle correlations and inclusive spectra
Beams:	S at 200 GeV/A
Targets:	Au

Physics Summary

The experiment combines two essential means of quark matter diagnosis: the measurement of photon production rates relative to charged particles or π°'s, and the measurement of transverse momenta of charged and neutral particles and their correlations. The experimental setup consists of highly segmented lead glass arrays (3780 modules) at a distance of 9 m from the target covering the range $2<y<3$. The detector allows to reconstruct the transverse momentum of π°'s and η's. A preshower detector that can be operated in a hadron-blind mode complements the photon measurement in the range $3<y<5.5$. The detector yields the number of photons and — to a limited extent — information on the total electromagnetic transverse energy. Charged particle tracking is achieved by a set of newly developed multistep avalanche chambers read out by CCD cameras downstream of the GOLIATH vertex magnet. Bose-Einstein correlations allow source size measurements up to 20 fm. The coverage is $2<y<4$ for two field settings of $B\times L = 1$ and 2 Tm. Events of high energy density (central collisions) are selected by triggering on high E_T or low energy deposition at zero degree.

Selected Publications

"Proposal for a Light Universal Detector for the Study of Correlations between Photons and Charged Particles", CERN/SPSLC 90-14, SPSLC/P252 May, 1990.

"Large parallel plate avalanche chambers for multiparticle tracking", A.L.S. Angelis *et al.*, Nucl. Phys. A **566** (1994) 605c-610c.

"Photon Multiplicity Measurements in Nucleus-Nucleus Collisions at 200 A GeV", Y.P. Viyogi *et al.*, Nucl. Phys. A **566** (1994) 623c-628c.

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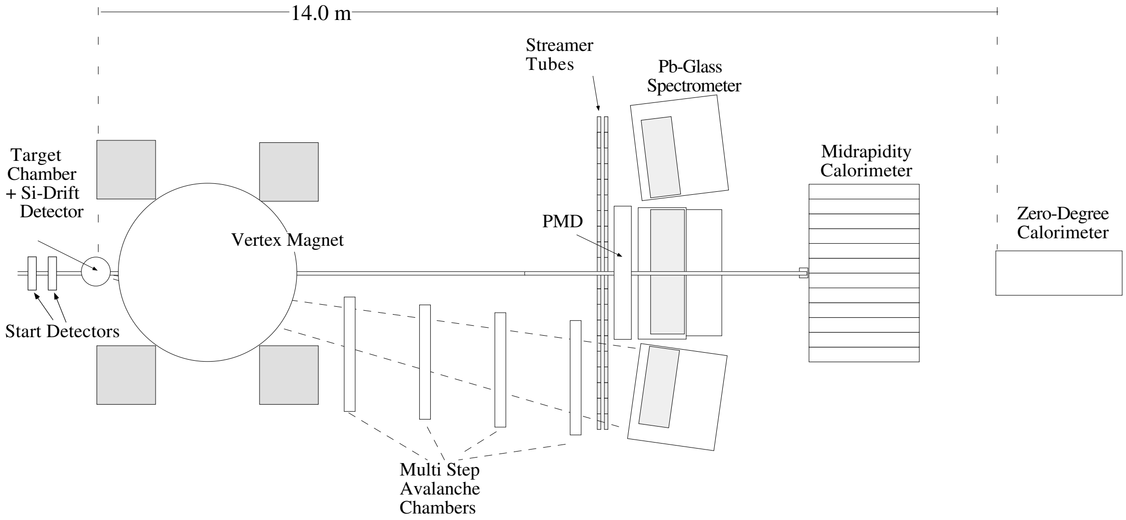

Figure 1: Top view of the WA93 experiment

Figure Details

Target Chamber + Si-Drift Detector (SDD)
Start Detectors
Vertex Magnet (GOLIATH)
Multi Step Avalanche Chambers (MSAC's)
Photon Multiplicity Detector (PMD)
Pb-Glass Spectrometer
Midrapidity Calorimeter (MIRAC)
Zero-Degree Calorimeter

Related Experiments

WA80, WA98