Figure 1: Schematic layout of the H1 detector.

Figure 2: The H1 tracking system ($r-z$ view)

Figure 3: Central tracking system, section perpendicular to the beam

Figure 4: Left: Electron-proton scattering event as seen in the CJC showing tracks found by the pattern recognition program and mirror tracks. Right: Simulation of a CJC cell indicating the drift regions of the senses wires, drift lines and isochrones. The straight lines represent infinite momentum tracks from the beam axis.

Figure 5: Dependence of the CJC $z-$resolution on the amount of ionization. A minimum ionizing particle deposits typically 1000 counts.

Figure 6: Specific ionization versus particle momentum measured in the CJC in HERA runs.

Figure 7: Longitudinal and transverse cross-section through a cell of the CIZ. S: signal wires, P: potential wires, the $z-$coordinates are given relative to the center of the cell [mm].

Figure 8: Schematic view of the COZ.

Figure 9: Forward tracker overview. Top: cross-section in the $r, z-$plane showing the three supermodules. Bottom: cross-section in the $r, \phi-$plane showing the basic cell structure of each supermodule component in one quadrant (A: planar chamber, B: FWPC, C: TR, D: radial chamber).

Figure 10: Details of the forward tracker construction. Top: cross-section in the $r, z-$plane and in the $r, \phi-$plane showing the overall orientation of cells, wires and pads for each supermodule component. Bottom: details of cell construction.

Figure 11: FADC readout system for drift chambers

Figure 12: Longitudinal cross-section and details of the COP.

Figure 13: Cross section through the backward proportional chamber.

Figure 14: MWPC front end electronics and read-out system.

Figure 15: Layout of the closed circuit gas system for the planar drift chambers. CP: circuit membrane pump, FL: mechanical flow meter, FM: electronic flow meter, GC: gas chromatograph, HM: hygrometer, IM: infrared meter, MV: mechanical safety valve, $O_2$: $O_2$-meter, PG: mechanical pressure gauge, PT: electronic pressure transducer, SV: solenoid valve, V: mechanical two- or three-way valve.

Figure 16: Schematic cross-section of the inner and outer veto wall (left) and the ToF counters.

Figure 17: Time distribution of hits in a ToF counter.

Figure 18: a) Longitudinal view of calorimeters. b) Radial view of a LAr calorimeter wheel.

Figure 19: Schematic structure of the readout cell: a) e.m. cell, b) hadronic cell. All dimensions given in $\mu$m.

Figure 20: Relative stability of the electronic chain over one month.

Figure 21: Noise contribution summed over all channels of the LAr calorimeter: a) after applying a $+2\sigma$ noise threshold, b) after noise suppression.

Figure 22: Correlation between the true energy lost in front of the calorimeter ($E_{lost}^{true}$) and its estimation in the reconstruction ($E_{lost}^{rec}$) for simulated low $Q^2$ DIS.

Figure 23: The effective mass of two photons before (dashed histogram) and after (hatched one) the dead material correction.

Figure 24: Performance of the dead material correction for simulated pions at 20 GeV. Ratios $(-E_{lost}^{true})/E_{tot}^{true}$ (circles) and $(E_{lost}^{rec} - E_{lost}^{true})/E_{tot}^{true}$ (crosses) are shown as function of $\theta$ and $\phi$ (both given in degrees). Before the correction a crack structure is clearly seen. Solid lines correspond to $\pm 1\%$ deviations from the true energy .

Figure 25: Response across the CB2/CB3 $z$ crack in a pion test beam of 30 GeV at CERN.

Figure 26: Reconstructed energy for data (histogram) and MC (points) for electron energies of 10, 20, 30 and 50 GeV (BBE Wheel).

Figure 27: Energy resolution as function of electron energy for wheels BBE, CB, FB2 and IF. Solid line: parametrization for FB2.

Figure 28: Energy reconstruction for pions at 80 GeV for wheels CB, FB and IF on the electromagnetic (open) and hadronic energy scale (closed, shadowed) for data (histogram) and MC (points).

Figure 29: Energy reconstruction for pions at 205 GeV for wheel IF with tail catcher (open histogram), only IF (circles) and for events fully contained in IF. Solid lines: fitted Gaussian distributions.

Figure 30: Energy resolution as function of pion energy for wheel IF. Circles: IF only , triangles: IF + iron tail catcher. Parametrization according to equation (2) with
A = (50.7 ± 0.1)% [$\sqrt{GeV}$], B = 0.9 GeV and C = 1.6 ± 0.1%.

Figure 31: Energy/momentum match of electrons generated by cosmic muons measured in the CJC and LAr CB wheels.

Figure 32: Transverse momentum balance $p_{th}/p_{te}$ for both scattered electron and hadronic shower detected in the LAr calorimeter for data (open symbols) and Monte Carlo (histogram).

Figure 33: Transverse view of the BEMC barrel and longitudinal cross-sections of BEMC stacks, The positions of all long WLS in the BEMC are marked in (a). The scintillating light is read out transversely via long WLS covering the full length of the BEMC stacks (b). In square and trapezoid stacks the last 15 sampling layers are read out via short WLS (c).

Figure 34: Energy spectrum of low $Q^2$ DIS electrons scattered in the region of square BEMC stacks. For simulation (shaded area) the structure function GRV is used.

Figure 35: Cross sectional view of the PLUG calorimeter.

Figure 36: Typical $I/V-$ and $C/V-$characteristics of the PLUG Si-detectors.

Figure 37: PLUG response to $ep$ events compared to a MC simulation (solid line) produced using the Colour Dipole Model.

Figure 38: Muon spectra summed over a complete module for a) inner towers normalized to 4 planes, and b) outer towers normalized to 5 planes. The curves are fits to a Landau distribution.

Figure 39: Ratio of the total transverse hadronic energy- including the corrected TC energy - and the transverse electron energy versus the energy fraction in the TC, for NC events. The line is a fit to the data.

Figure 40: Structure of LST chambers.

Figure 41: Iron instrumentation showing the pointing pad structure of the barrel region. The crossed elements represent dummy modules which fill the space not occupied by the chambers in a way to ensure that the dead areas are not aligned for tracks from the vertex region (P=pads; S=strips).

Figure 42: The local data acquisition system.

Figure 43: Efficiency of chamber planes . The following numbering scheme is used: 0 - 15 backward endcap (from bottom to top), 16 - 31 backward barrel, 32 - 47 forward barrel, 48 - 63 forward endcap (from bottom to top).

Figure 44: Wire and strip multiplicity per event.

Figure 45: Muon reconstruction efficiency in the barrel region as function of the muon energy [GeV] determined from cosmic muons. The average efficiency in the plateau region is 89 % and is determined by geometrical acceptance.

Figure 46: a) A schematic view of the forward muon spectrometer and b) the cell structure of a double layer.

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