

Precise Field Measurements on LEP Dipole Magnets, E. BRAVIN, B. DEHNING, G. MUGNAI, CERN - The determination of the Z mass requires the knowledge of the beam energy with accuracy of the order of 10^{-5} . It is therefore essential to understand the variations of the dipoles field at the same precision level. The field in the LEP bending magnets shows a relative increase in the order of 10^{-4} over 10 hours which was found to be caused by temperature transients and railway leakage currents flowing over the vacuum chamber. A test bench was set up for systematic investigations. Field variations were monitored with NMR probes while the temperature of both coil and vacuum chamber was kept under control. The temperature profile of the iron-concrete core as well as the gap height changes were also measured. The major result was the parametrisation of the magnetic field variations as a function of the temperature and the vacuum chamber current leading to an improvement in the errors of the beam energies. A description of the test bench as well as the results will be presented.