

**Field Quality of the Main Dipole Magnets for the LHC Accelerator, L. BOTTURA, A. FAUS-GOLFE, L. WALCKIERS, R. WOLF, CERN, CH-1211 Geneva 23, Switzerland** - The superconducting magnets of the arcs of the LHC accelerator must have a field quality that has to be carefully optimized for the different operation phases of the accelerator. Both short and long dipole model magnets were therefore measured in detail. We will report on recent progress to understand and quantify effects related to the magnetization of the superconductor. Time dependent effects at fields corresponding to beam injection and beginning of the acceleration will depend on previous current cycles, in particular on their ramp rates and the duration of the flat tops. A tentative measurements database is used to demonstrate how an optimization of the operating current cycles reduces dynamic effects to acceptable levels. The measured field errors due to geometrical imperfections in the coil and saturation of the yoke will be reviewed, including contributions from any misalignment of the dipoles and correctors magnets.