

Evaluation of Impact from Ripple and Transient Phenomena in the LHC Dipole and Quadrupole Strings. Methods and Results, K. DAHLERUP-PETERSEN, F. SCHMIDT, CERN, Geneva - Based on measurements of the a.c. electrical characteristics of the prototype magnets, synthesized computer models of the individual, superconducting main dipole and quadrupole lenses of the Large Hadron Collider have been elaborated. They constitute the basic elements for the determination of the transfer functions of strings of magnets, representing an octant of the machine. This provides the possibility to locate and evaluate resonances and the needs for additional damping. Results of the simulation of transmission line effects are given. In particular, data from ripple calculations and studies of the propagation of transients along the magnet strings are presented. Finally, results from computer simulations of the quench protection system are shown, presenting the voltages (differential and to earth) and the existence of resonances during normal operation and under accidental conditions.