

The Effects of LHC Civil Engineering on the SPS and LEP Machines, B. GODDARD, N. HILLERET, M. PLACIDI, J. POOLE, J.P. QUESNEL, H. RAMMER, G. DE RIJK, G. ROY, A. VERDIER - The LHC civil engineering work started early in 1998 and will continue throughout the final period of LEP operation and whilst the SPS provides beams for LEP, fixed target physics and LHC test beams. It is essential that this civil engineering work does not affect the performance of the LEP and SPS machines. The excavation of shafts and caverns for the Atlas and CMS experiments are predicted to cause vertical movements of up to 30 mm over short lengths (~50 m) of the LEP and SPS tunnels as well as in the electron injection line to LEP. Horizontal movements of up to 10mm are also expected from these works and further perturbations are expected from the construction of the transfer lines between the SPS and LHC. The displacement of machine elements resulting from the tunnel movements would prevent operation of the machines and ultimately break vacuum elements if no precautions are taken. Modifications will be made to the hardware in the affected areas, the position of the machine components will be continuously monitored and special optics will be used in LEP. The details of the movements, their effects on the equipment and the proposed precautions are described in this paper.