

Beam-Induced Electron Cloud in the LHC and possible Remedies, V. BAGLIN, O. BRÜNING, R. CALDER, F. CASPERS, I.R. COLLINS, O. GRÖBNER, N. HILLERET, J.-M. LAURENT, M. MORVILLO, F. RUGGIERO, CERN - Synchrotron radiation from proton bunches in the LHC creates photoelectrons at the beam screen wall. These photoelectrons are accelerated towards the positively charged proton bunch and drift across the beam pipe between successive bunches. When they hit the opposite wall, they generate secondary electrons which can in turn be accelerated by the next bunch if they are slow enough to survive. We summarize the results of an intensive research program set up at CERN and discuss recent multipacting tests as well as the importance of several key parameters, such as photon reflectivity, photoelectron and secondary electron yield. Then, based on analytic estimates and simulation results, we discuss possible solutions to avoid the fast build-up of an electron cloud with potential implications for beam stability and heat load on the cryogenic system.