Results of Long-Term Performance and Laboratory Tests on the L3 RPC Trigger System at LEP

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The L3 experiment has been equipped with a forward–backward spectrometer triggered by an RPC system made of 192 double-gap chambers working in streamer mode. We monitored the behavior of the system over seven years of L3 activities. After the end of the LEP run, a small number of the chambers have been tested and analysed in our test site in Napoli. In this talk, we report on the long-term performance and the laboratory results.

Summary of Talk: In this talk, we aim at showing the behavior of the RPC chambers after 7 years of LEP running. The L3 muon trigger system as well as the RPC chamber characteristics will be described in the first part of the talk. The RPC's that were monitored during the LEP activities show a small reduction of performance in some chambers. In order to determine with good precision the RPC performance, some chambers have been tested with cosmic rays in our laboratory in Napoli during the L3 dismantling. The results of these tests show an average detector efficiency greater than 90%, even if the efficiency of a very small number of this sample is quite low. This could be due to mechanical deformations even if other effects could be responsible for this efficiency reduction. Further investigations are needed.