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The Charged Trigger System of NA48 at CERN

S. Anvar, F. Bugeon, P. Debu, J.L. Fallou, H. Le Provost,
F. Louis, M. Mur, S. Schanne, G. Tarte and B. Vallage

*DSM/DAPNIA
CEA Saclay, Gif-Sur-Yvette Cedex, France*

The NA48 charged trigger is a mixed hardware and software real time processing system intended to detect the interesting configurations of K^0 charged decays. It achieves real-time event building, track reconstruction and kinematics computation on drift chamber data at an event rate of 100 kHz and within a maximum decision latency of 100 μ s. The system uses data driven, FPGA-based coordinate builders, a hardware event builder based on a crossbar switch, and a farm of up to 16 event processors for its software part. It has been installed and operated at CERN since 1995. After a description of the constraints and architecture of the various subsystems, the paper will give an account of the results and performance of the system based on the 1996/1997 runs.

More specifically, the replacement of the present DSP-based implementation of the processing farm by RISC processors will be discussed.