ON-LINE EVENT FILTERING USING THE 168/E IN CERN EXPERIMENT NA4

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The application of the 168/E IBM emulator as an on-line filter computer in experiment NA4 at the CERN SPS is described.

Programs for the 168/E, developed and compiled on the IBM 370/168, are transferred in executable format to the NORD on-line computer through CERNET. The program modules are subsequently loaded into the 168/E program memory (32kw,24bits) using an especially developed CAMAC interface module. This unit, when operated in a CAMAC dataway spy mode, also allows transfers of experimental data directly from CAMAC to the 168/E data memory (128kbytes). However, in the burst environment of the SPS, events are usually buffered in the NORD computer memory.

Filter programs include the data checking and tracking routines of the existing off-line production program. Because of the relatively small program size complicated overlay structures are avoided, thus simplifying the operation of the 168/E.

Based on IBM 370/168 performance figures for the production program, the 168/E program execution time per event (average size 1200 bytes) is estimated to about 30 millisec, resulting in a throughput of approx. 300 events per SPS burst. The reduction factor obtained is around 3.

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