decay of charm and bottom particles is handled by QQ, a Monte Carlo package developed for CLEO. A 3-D Graphics package based on SGI-Explorer has been developed to display the detector geometry, tracks and hits.

The primary goal of MCfast is speed and flexibility which is achieved through parameterization. The emphasis of the program is fast tracking which is based on a Kalman filter technique. Hit generation has been included in the MCfast package and is under development. An interface between the MCfast geometry and GEANT has been written to enable more detailed simulations. Parameterized calorimetry inside the MCfast framework is planned for the next release.

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ABS_139

## GE781: a Monte Carlo package for fixed target experiments

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The Monte Carlo package for the fixed target experiment E781 at Fermilab is described. This is a third generation charmed baryon experiment, which is quite complex. The apparatus contains more than 200 thousand read-out channels and includes many Si-Strip detectors, PWCs, drift chambers, photon calorimeters and also such complicated devices like RICH and TRD detectors. The simulation package is based on GEANT 3.21, ADAMO database and DAFT (Data From Tape) input/output routines. The program was conceived in a structural form using PATCHY/CMZ so as to be possible to develop detector dependent blocks of it in different parts of the world. This block structure and the ADAMO database gives us the possibility to simulate virtually any fixed target experiment. Event generation includes the simulation of E781 hyperon beam, its interaction in the charm production targets according to different LUND generators. An entity relationship structure (Monte Carlo block) for hits and tracks is constructed to save the event information. The digitization of each detector set is packed in the form of the raw data blocks. The output of the program is made according to the data acquisition format, using DAFT, and contains raw data and Monte Carlo blocks. This package has been tested on different Unix platforms.

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ABS_128

## The Detector Simulation of the L3 Experiment at LEP

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The L3 simulation program, based on the GEANT package, has been intensively used to produce the events needed for the L3 analysis. After six years of operation of the L3 detector over 30 million events have been fully simulated in the L3 setup. The simulation having to match the precision reached in the experiment, a lot of effort has been put to reach the best agreement of the simulated data with the real detector response. In addition to the careful tuning of the GEANT tracking parameters many time dependent effects which affect the response of the detector, like dead channels and inefficiencies, have been taken into account. The design principles and the general organization of the program are described and detailed comparisons with the data recorded by the L3 experiment are shown. In order to simulate the large number of events required, inside the L3 collaboration many tools have been developed to set up a worldwide distributed event simulation and to maintain an accurate bookkeeping of the simulated events. This allows to fully exploit the computing resources of the institutes involved in the L3 experiment and to be able to satisfy the need of a very large amount of CPU time. The current status of our experience in simulating a large number of events with the highest possible precision is reviewed. The simulation of the L3 detector, which is one of the largest detectors currently in operation, could be considered as the starting point for the simulation of the next generation of high energy physics detectors which will start taking data after the year 2000.

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ABS_120

## A New Query Processor for PAW

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The interactive analysis of high energy physics event data using HBOOK ntuples has always been one of the major strengths of the PAW system. With the