

# BEAM THREADING IN THE LHC

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## **Abstract**

Particles circulating in the LHC will experience a considerable amount of non-linear magnetic forces, in particular at injection. Therefore it will not be trivial to achieve a circulating beam. To this end pilot bunches will be used, and an iterative procedure based on pickup readout values will thread the beam through the ring. This works in simulation, using a realistic model of the LHC which includes all estimated magnet alignment and field errors. Pairs of horizontal or vertical pickups are used to calculate increments in pairs of preceding correctors, based on a linearized matrix from the model of the LHC. This readout and correction cycle could be made automatic. It is intended to try the threader out in LEP in october 98.