Space-Charge Simulations Using Parallel Algorithms, M. GIOVANNOZZI CERN - The evaluation of the space-charge effects on the beam dynamics requires CPU-time intensive numerical simulations. To obtain accurate results, it is necessary to consider a large number of macro-particles and to track them through the magnetic lattice. To reduce the real time needed by the simulations, a possible solution is to develop parallel algorithms. In this way, the computational burden can be distributed over many CPUs thus reducing the time to obtain results. In this paper a parallel algorithm based on pipeline approach is presented. The overall performance of such algorithm is investigated using a simple model of a FODO cell including a sextupole in the thin lens approximation.