Hamiltonian Calculations on Particle Motion in Linear Electron Accelerators, J.I.M. BOTMAN, J.M. CORSTENS, H.L. HAGEDOORN, A.F.J. HAMMEN, W.H.C. THEUWS, Eindhoven University of Technology, Cyclotron Laboratory, P.O. Box 513, 5600 MB Eindhoven, The Netherlands - A Hamiltonian theory, in which electromagnetic space waves and longitudinal focusing magnetic fields are incorporated by means of their vector potentials, is used to calculate particle motion in linear electron accelerators. In particular these calculations have been applied to the Eindhoven 10 MeV travelling-wave linac as well as to the standing-wave accelerating cavity of the Eindhoven racetrack microtron (RTM). Hamiltonian calculations and simulations performed by particle-tracking codes agree in longitudinal direction and show only slight differences in transverse direction. These differences are smaller when larger starting energies are used, leading to very good results in the RTM calculations.