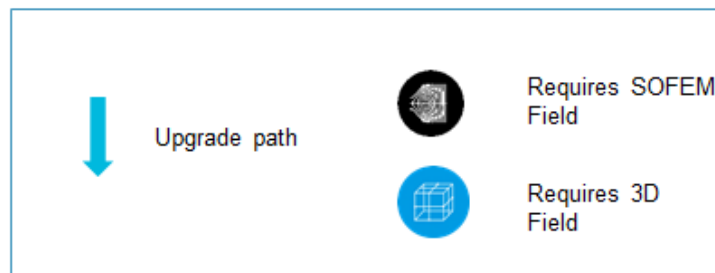
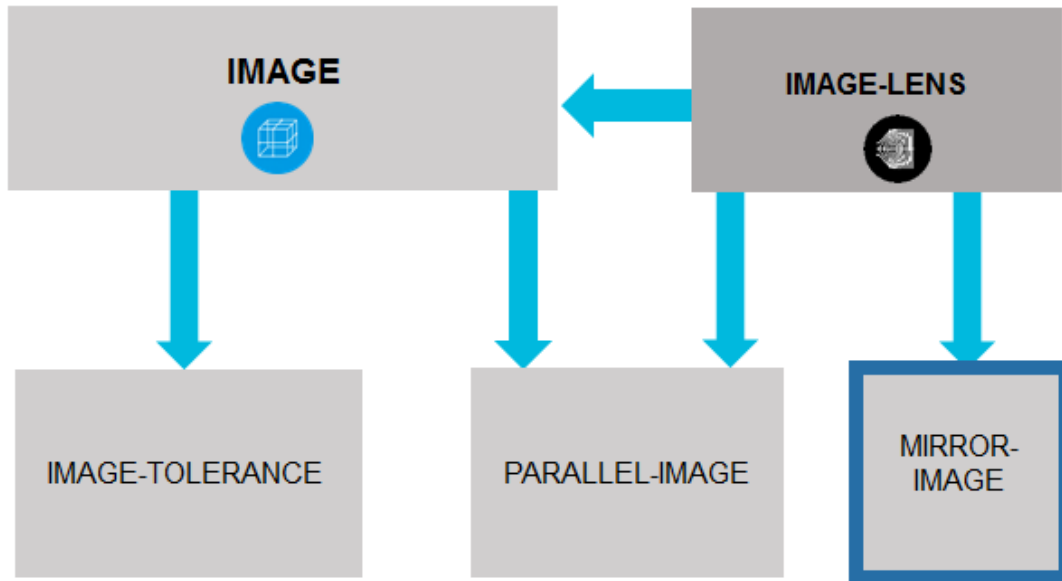


MIRROR-IMAGE

Simulation of electron and ion mirrors

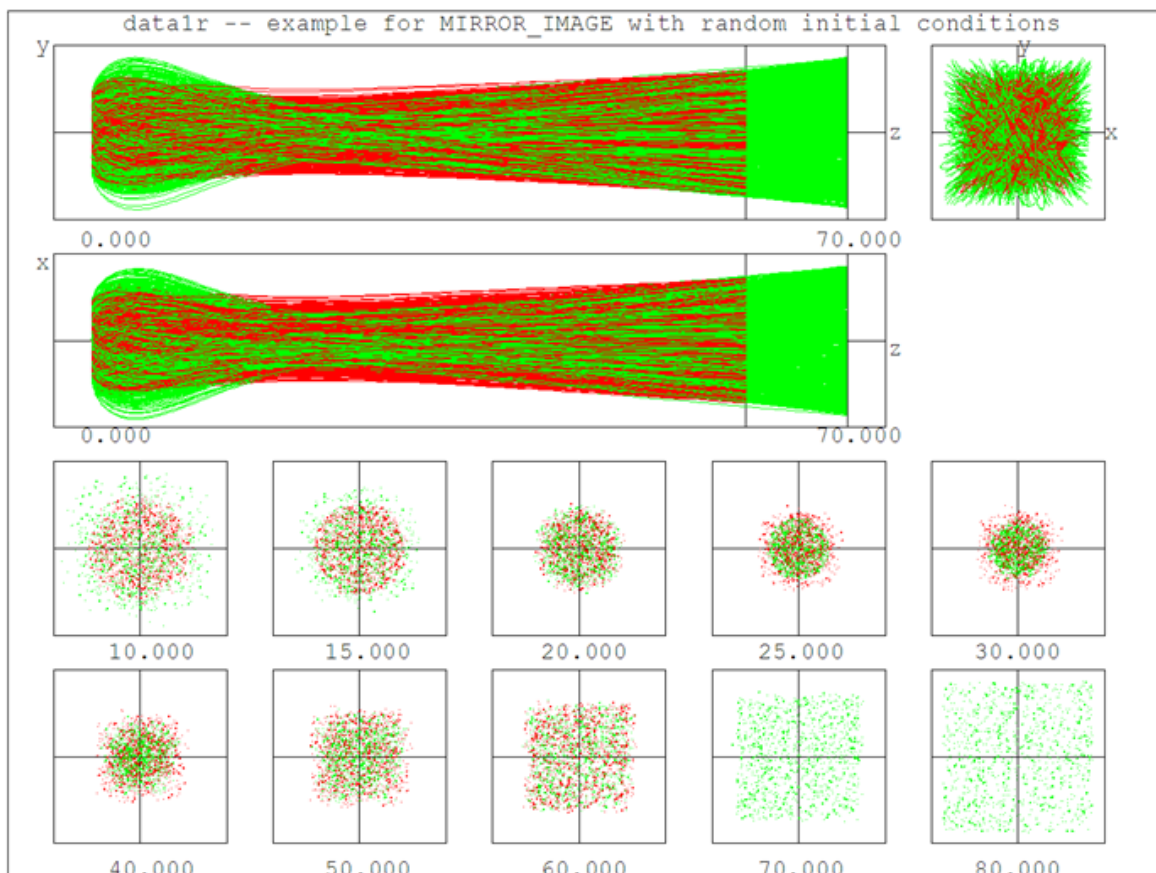


Overview

The MIRROR-IMAGE software package is a set of programs for simulating the optical properties of electron mirrors by direct ray-tracing. The software handles electron mirrors containing any combination of rotationally symmetric electrostatic and magnetic fields. The software can handle combinations of electron mirrors and electron lenses.

MIRROR-IMAGE is based on the IMAGE software package. It uses the same fundamental methods as IMAGE, including representation of the fields by Hermite series, direct ray-tracing using a fifth-order Runge-Kutta method with adaptive step size, and calculation of the discrete Coulomb interaction effects by Monte Carlo simulation with many discrete bunches of charged particles.

The MIRROR-IMAGE package includes a main program for computing the paths of charged particles through the mirror by direct ray-tracing and post-processing programs for plotting spot diagrams of the aberrations at the image plane and for plotting the trajectories. The main program allows initial conditions to be specified, to enable spot diagrams of the overall beam shape at the image plane to be computed and plotted. It also allows random initial conditions to be assigned to bunches of particles, to enable the discrete Coulomb interaction effects in the beam to be computed. It should be noted that the Coulomb interaction calculation does not take into account the interaction between the forward and reflected beams.



MIRROR-IMAGE Plot showing incident and reflected electrons in a mirror system