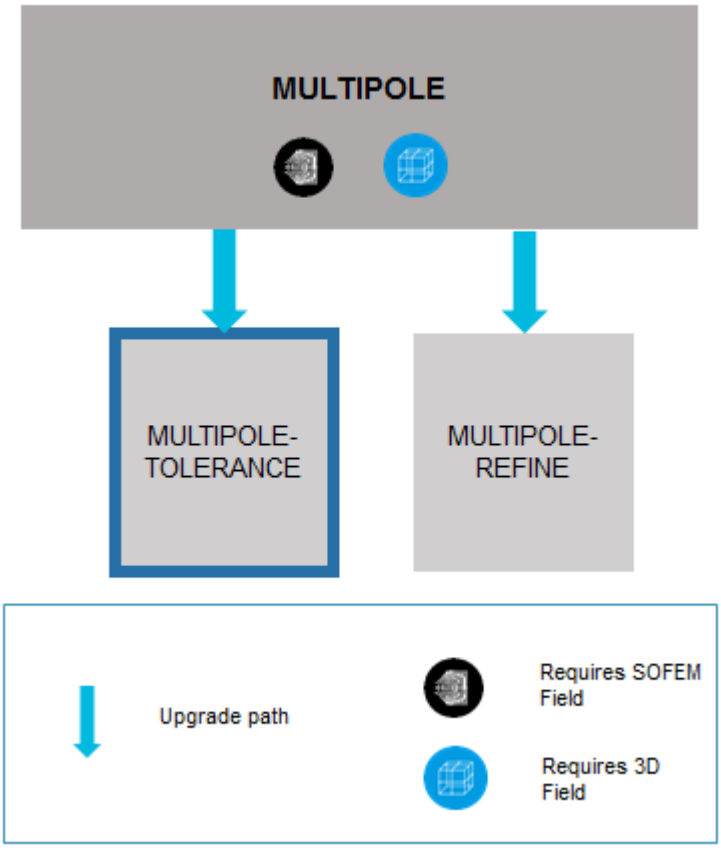
MULTIPOLE TOLERANCE

Multipole system tolerancing



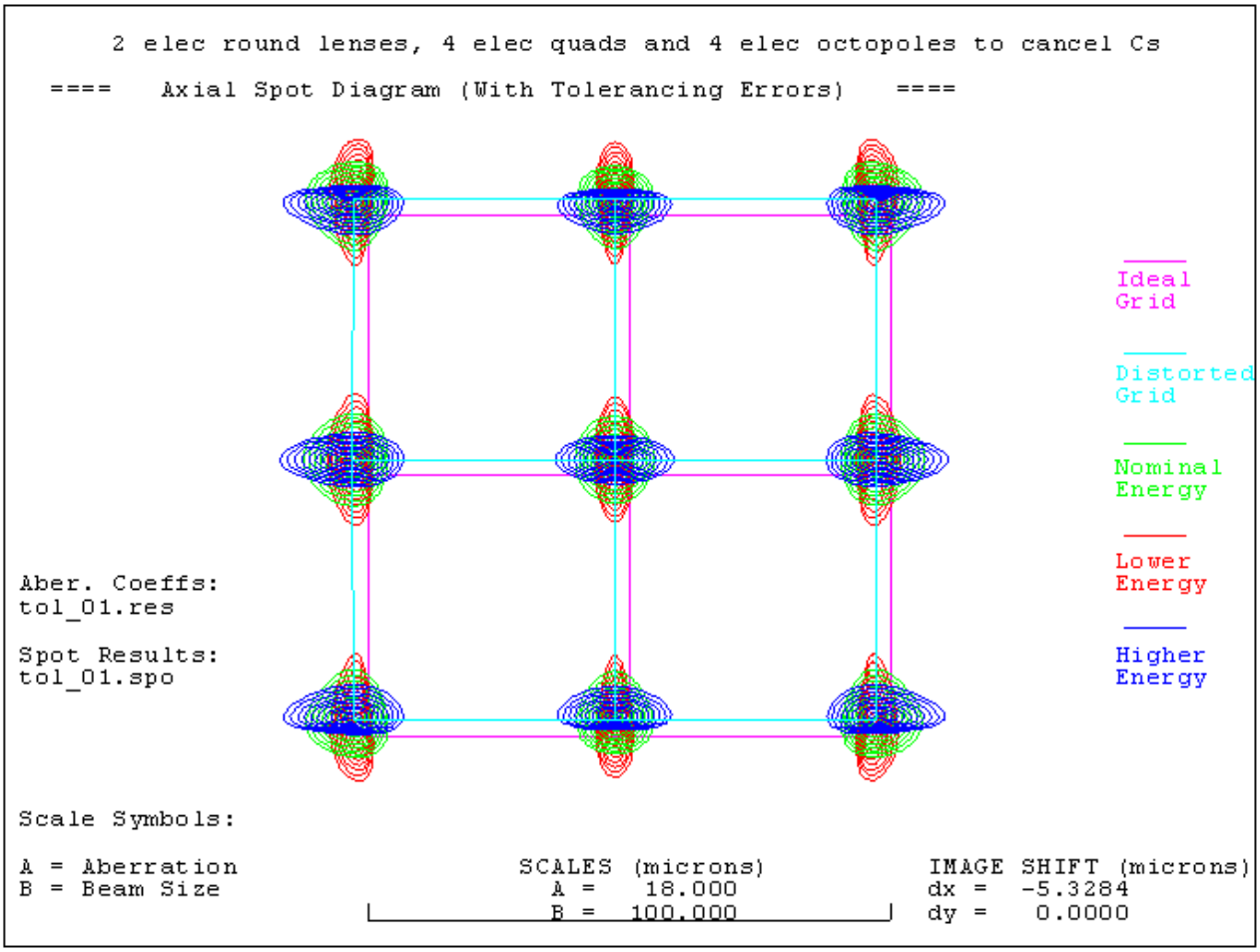
Overview

Real columns suffer from asymmetry errors caused by small mechanical imperfections during construction and alignment. Using the MULTIPOLE-TOLERANCE software the user can compute the perturbation fields and aberrations due to tilts, misalignments and ellipticities in the electrodes, to ensure that the system will perform in accordance with its design specifications.

MULTIPOLE-TOLERANCE computes the additional third-order geometrical aberrations and first-order chromatic aberrations due to lens tolerancing errors in systems that do not include hexapole lenses; for systems with hexapoles lenses, the program also computes the additional second-order geometrical aberrations due to the tolerancing errors. It should be noted that MULTIPOLE-TOLERANCE cannot handle deflectors.

The normal lens fields are computed with our SOFEM and 3D software. The asymmetry fields for round lenses are computed by the field programs from our TOLERANCE package and, for multipole lenses, the asymmetry fields are computed with a modification of our 3D software that computes the difference between the ideal and perturbed lens.

The software is driven from a graphical user interface that allows clear control of the system and the tolerancing errors and the plotting of spot diagrams.



Aberration spot diagram with tolerancing errors