

New Features in the Simulation of Ion Extraction with IGUN, R. BECKER, IAP, Universität Frankfurt, Germany - Since its first presentation in 1991, the program IGUN for the simulation of ion extraction from plasmas has found wide-spread application in the optimisation of electrode design. While the first versions were limited in memory by the 640 kB barrier of those days hard- and software, this limit has virtually disappeared by today's 32-bit compilers and operating systems. In the paper the most important improvements will be discussed and relevant examples will be given: a mesh independent boundary input allows easy setup of concatenation runs as well as setting up runs with different mesh resolution, e.g. a high mesh resolution in the plasma sheath region and an appropriate one for the rest of the extraction optics, with simple transfer of ray tracing data between both. Very recently features have been added for the simultaneous extraction of ions with different mass and/or charge and for mesh independent definition of magnetic fields, either by defining internally the axial field of real solenoids or by using the save files of INTMAG, a BEM (boundary element method) type program for the accurate calculation of 2D rectangular or axisymmetric magnetostatic fields. As latest improvement a selfconsistent thermal space charge compensation has been implemented, which allows to study the optics effects of the compensated beam part as well as that of the transition region.