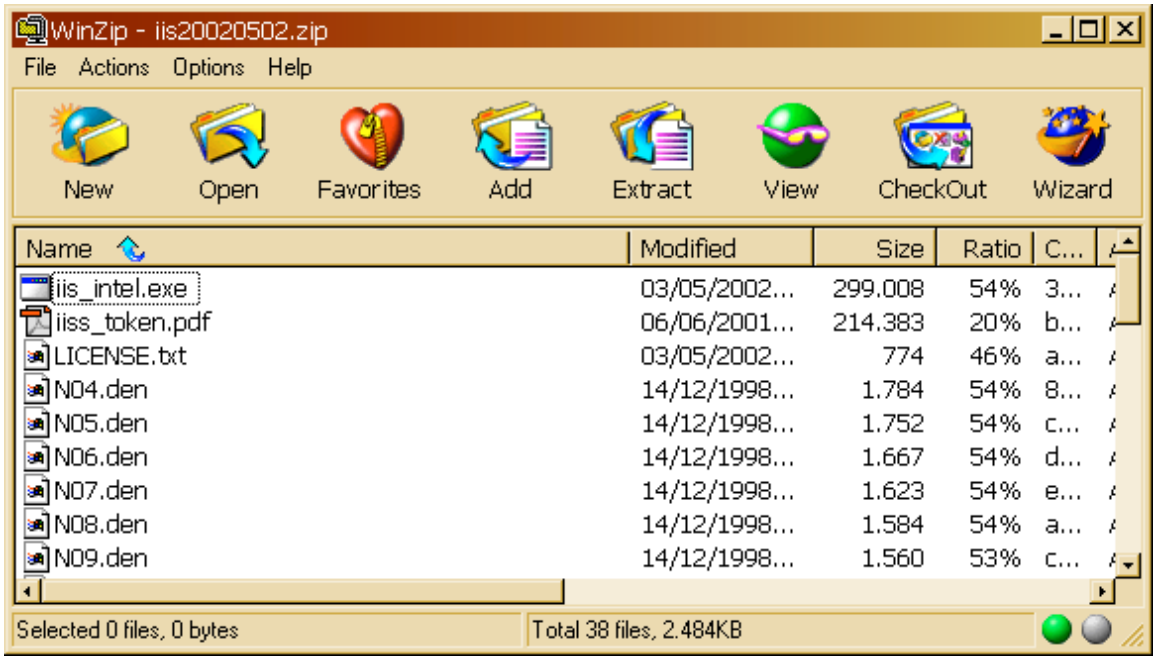
Instructions

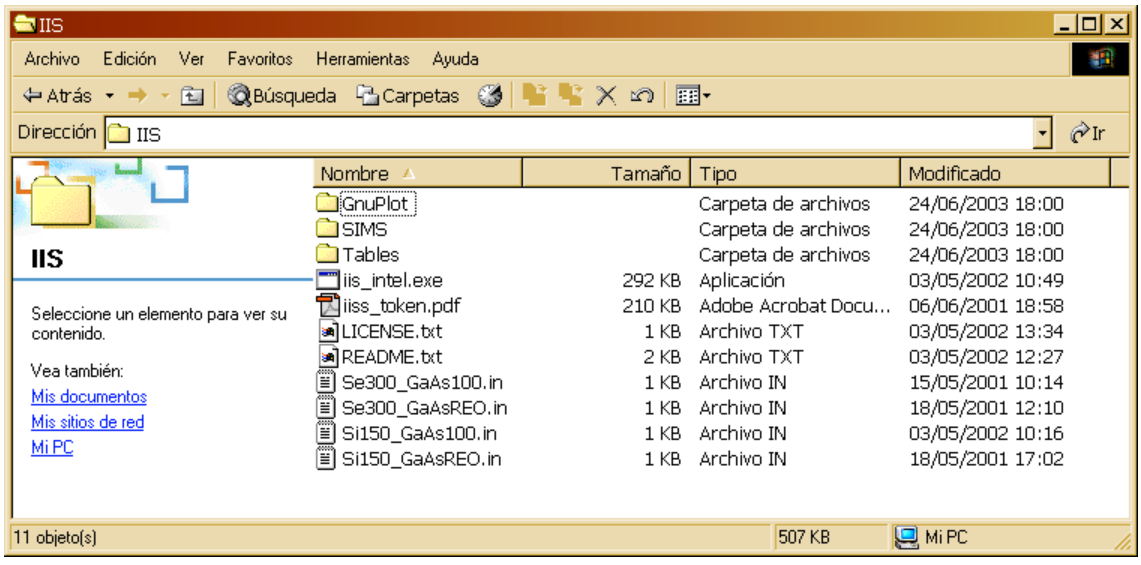
IIS (Ion Implant Simulator) from Windows.

Instalation

Instalation files are packed in .ZIP format. You must use WinZip-like unpacker in order to install (e.g: at `C:\IIS`).

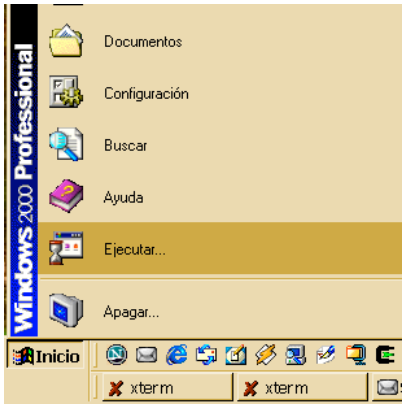


Directory will contain

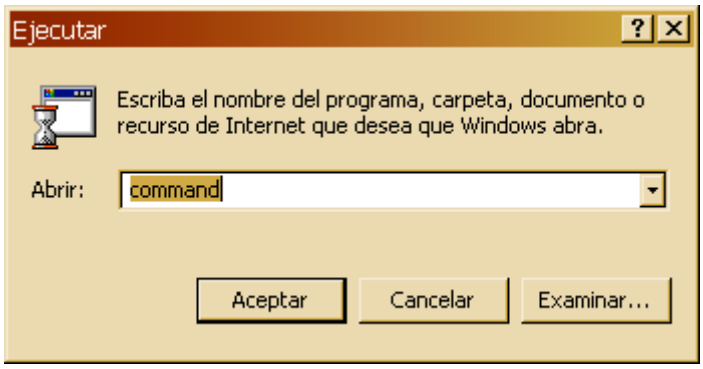


Execution of the simulator

You should open a command window. From the menu Start->Execute

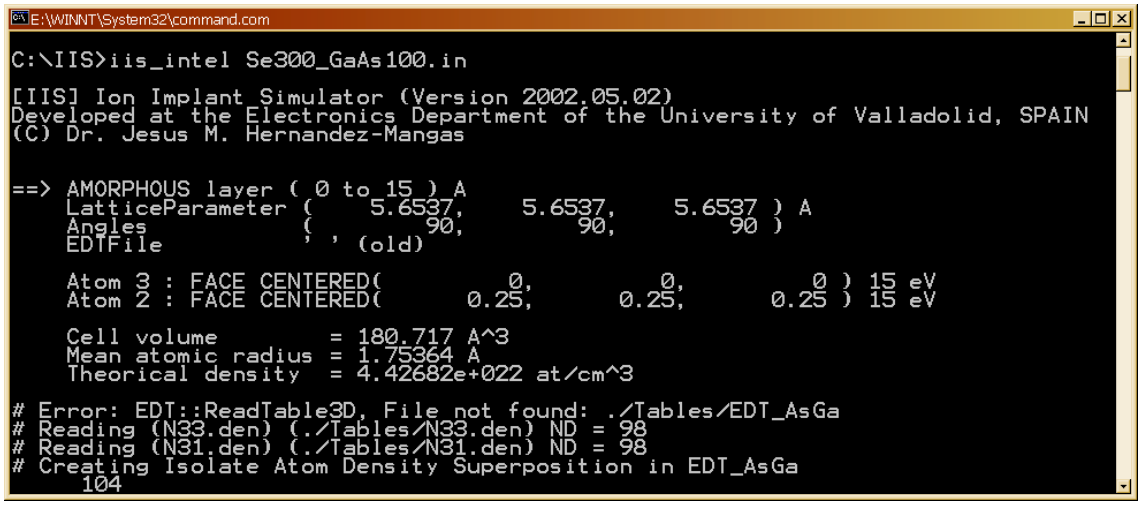


Type in `command`

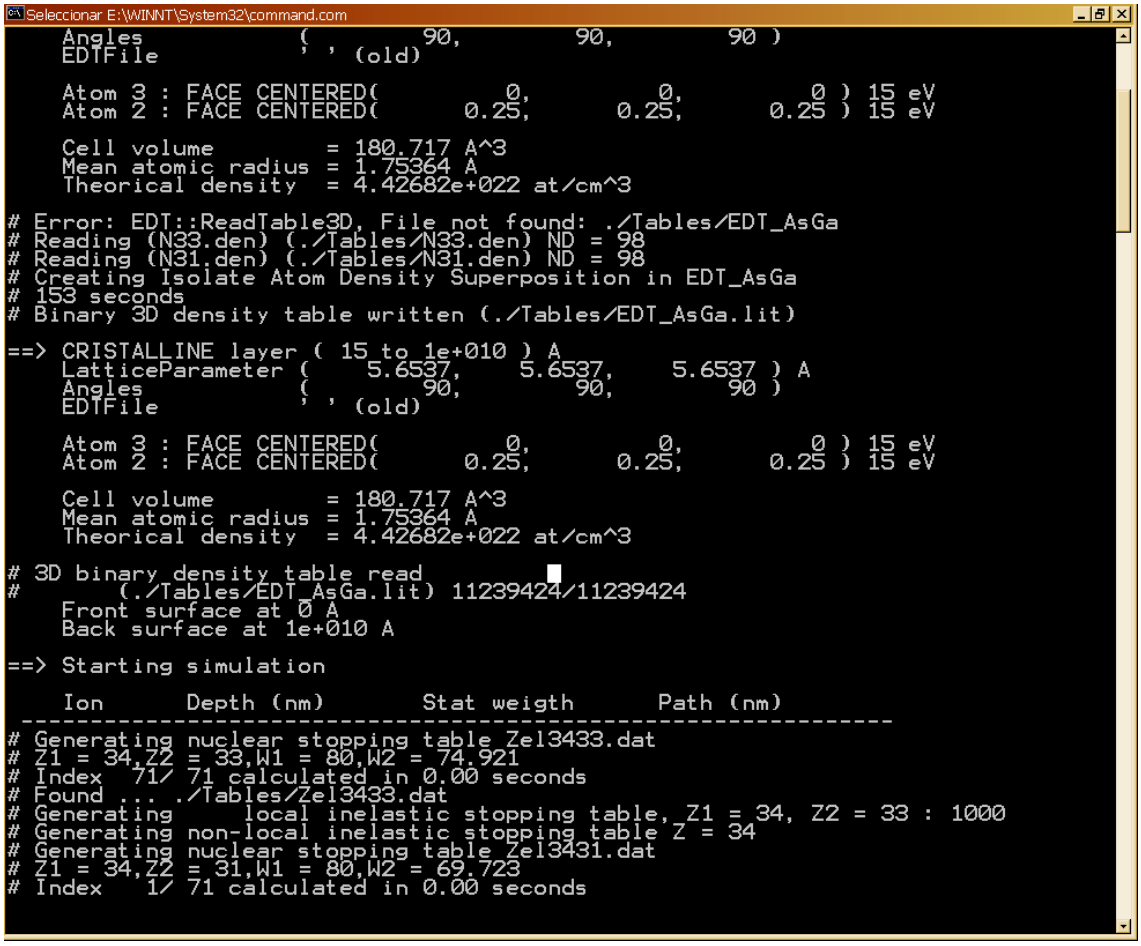


At this time you should change your working directory to where you installed the program. Then, the Simulator can be run : `iis_intel.exe input file`:

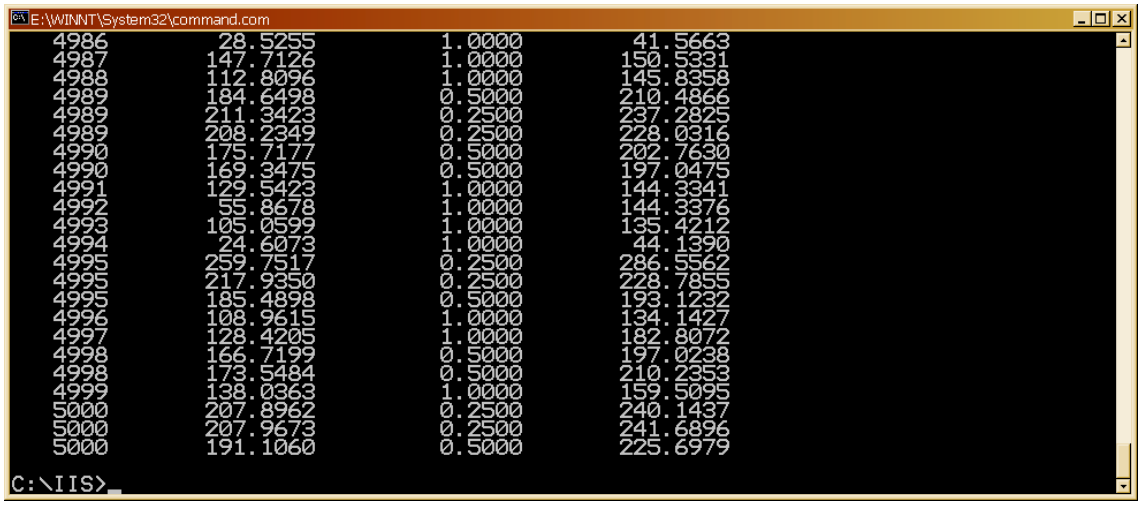
Program will start creating some three-dimensional electronic density tables that will be based on the superposition of isolate electron densities contained at `Tables directory`



The program will try to read another tables from the disk, and if they are not present they will be calculated as needed. These tables vill be stored in `Tables` directory for later use speeding-up the calculation time.

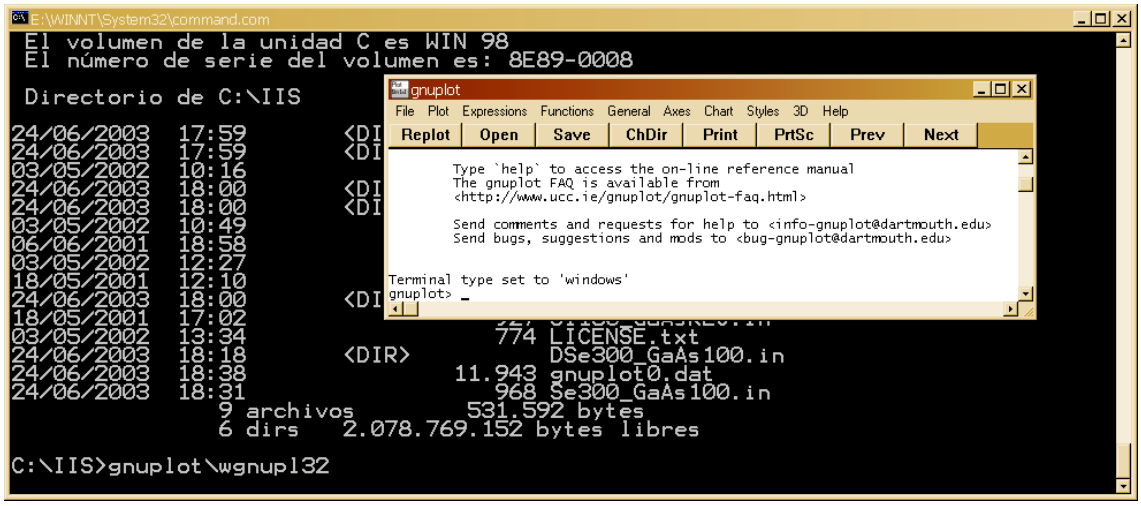


After the table generation the simulator begin to implant ions until complete the simulation.



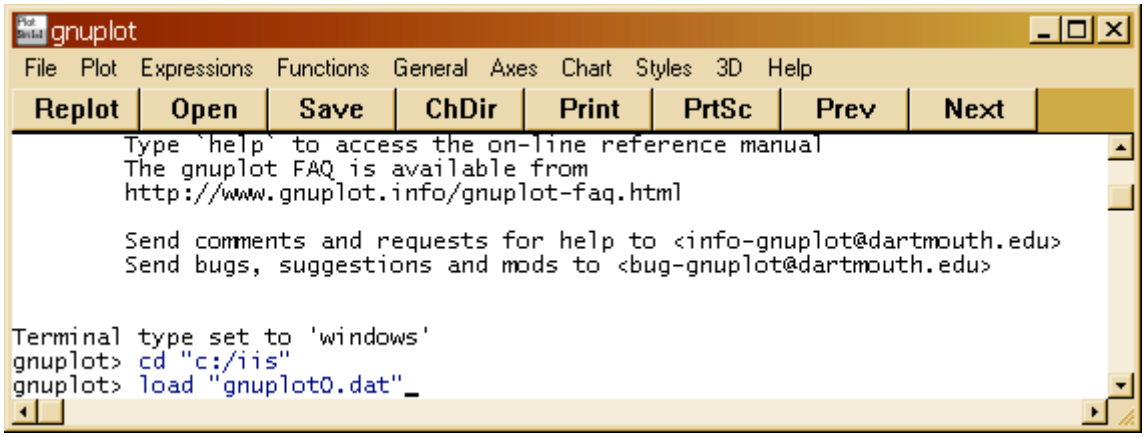
Results proccesing

We need to install some plotting program like `gnuplot` for windows: `wgnupl32.exe`

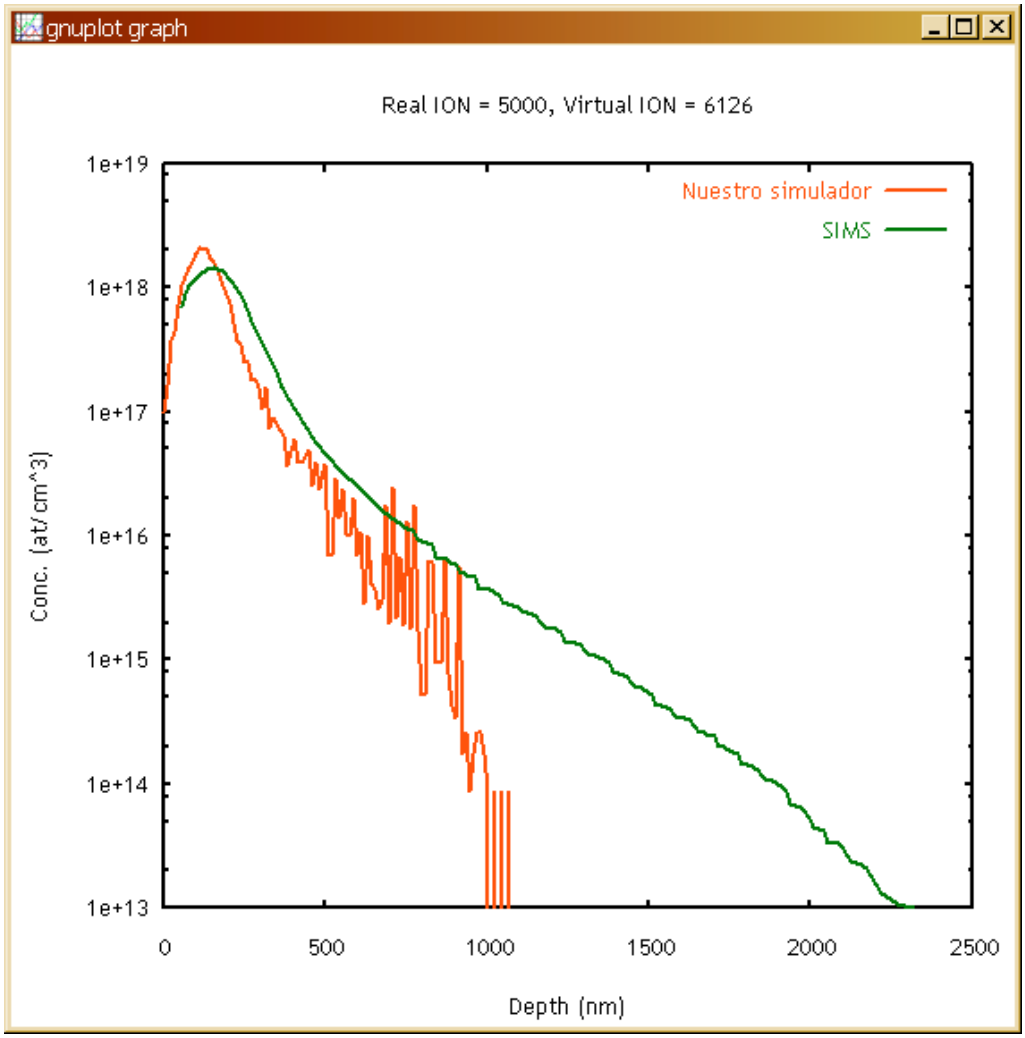


The simulator will create a file named `gnuplot0.dat` that includes some commands for `gnuplot` in order to visualize some data.

We introduce some commands



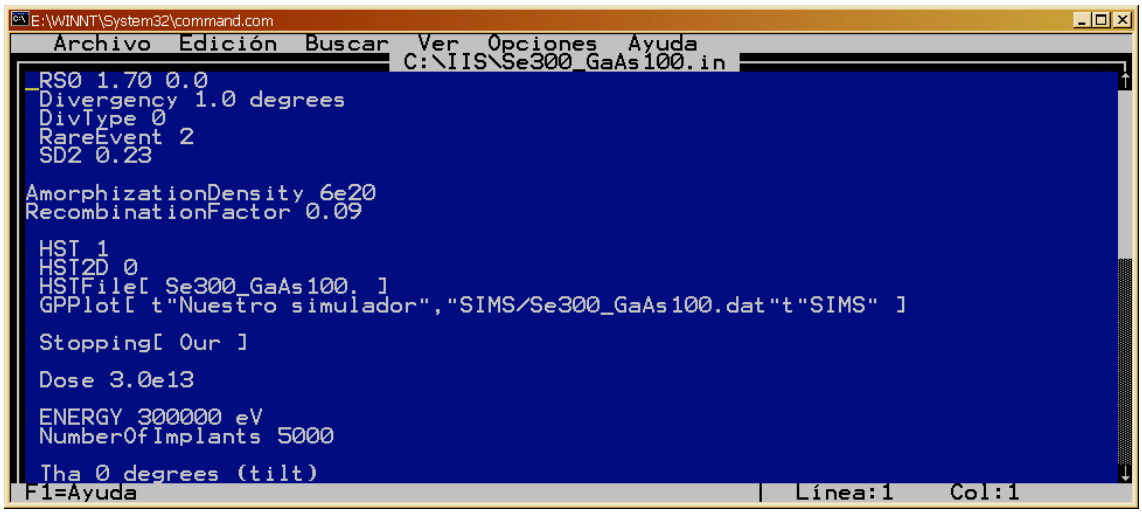
that will produce the plot below



We note a comparison between the simulator result and some experimental profiles previously digitized in the SIMS directory.

Input file

You can edit the input filewith the DOS command `edit Se300_GaAs100.in` as shown below



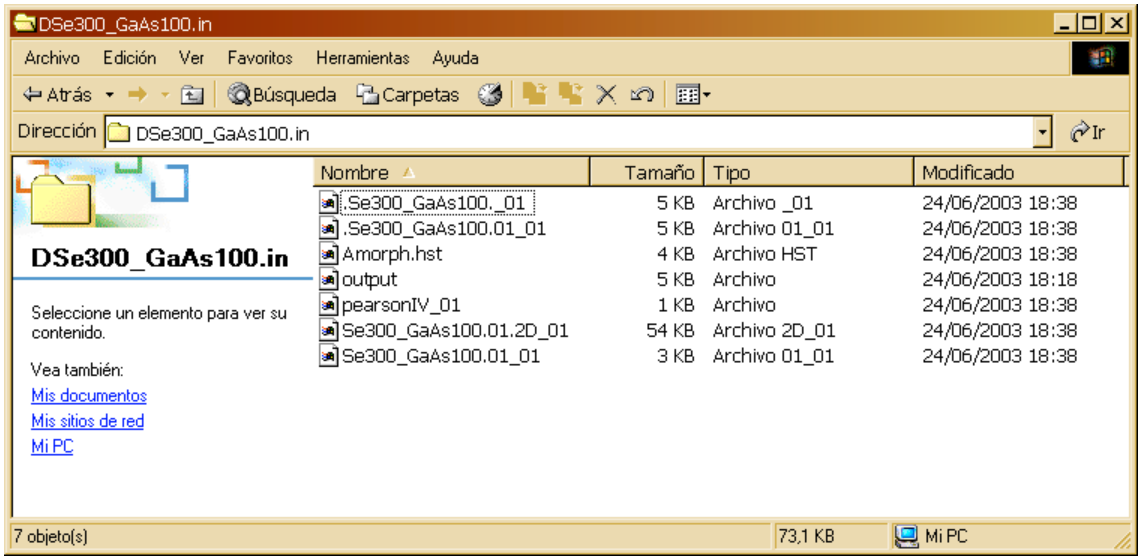
An example of input file is presented:

```
RS0 1.70 0.0
 Divergency 1.0 degrees
 DivType 0
 RareEvent 2
 SD2 0.23

AmorphizationDensity 6e20
RecombinationFactor 0.09

 HST 1
 HST2D 0
 HSTFile[ Se300_GaAs100. ]
 GPPlot[ t"Nuestro simulador","SIMS/Se300_GaAs100.dat"t"SIMS" ]

 Stopping[ Our ]

 Dose 3.0e13

 ENERGY 300000 eV
 NumberOfImplants 5000

 Tha 0 degrees (tilt)
 Phi 0 degrees

 ABC 1 0 0
 FLAT 0 1 1

 Therm 1
 Temperature 300 kelvin

 Atom Se 34 80.000  600.0 abundante al 49.61%
 Atom As 33 74.921  360.0
 Atom Ga 31 69.723  360.0

 AtomP 1

 LatticeParameter 5.6537 5.6537 5.6537
 Angles  90.0 90.0 90.0
 XTal 3 6 0.000 0.000 0.000   15 // Ga
 XTal 2 6 0.250 0.250 0.250   15 // As
 Amorphous 2
 XMin 0.0 A
 XMax 15 A

NextLayer

 LatticeParameter 5.6537 5.6537 5.6537
 Angles  90.0 90.0 90.0
 XTal 3 6 0.000 0.000 0.000   15 // Ga
 XTal 2 6 0.250 0.250 0.250   15 // As
```

```
Amorphous 0
XMin 15.0 A
XMax 1e10 A
```

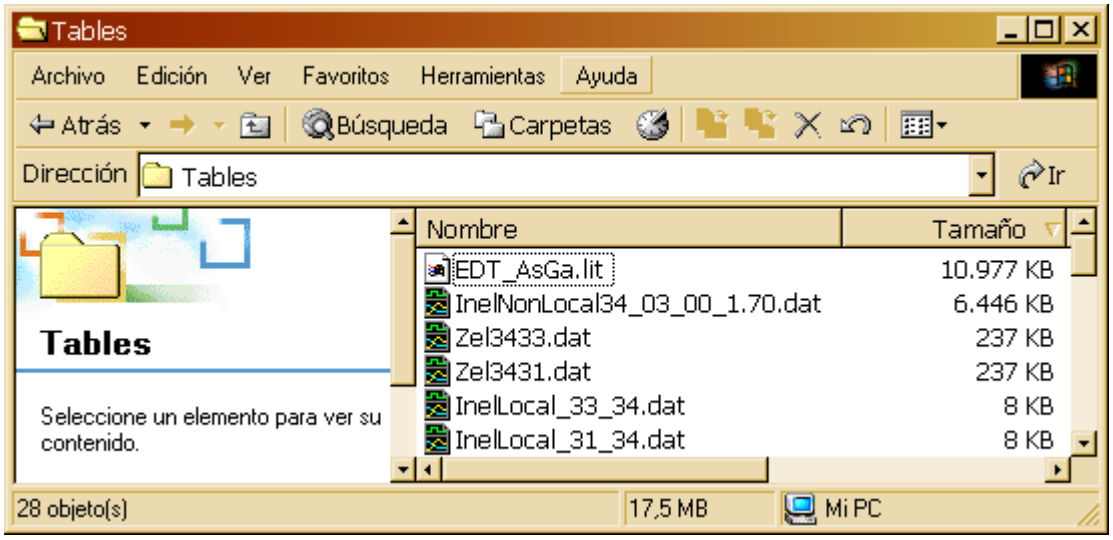
Output files

The output files will be stored in the `DSe300_GaAs100.in` directory:



`Se300_GaAs100.01_01`	1D doping profile. You can compare it with SIMS profiles
`Se300_GaAs100.01.2D_01`	2D projected doping profile
`Amorph.hst`	1D damage profile. Could be comparable with some RBS profiles
`output`	The parameters of simulation are stored in this file. It is useful to proof the simulator has undestood the input file
`pearsonIV_01`	Only generated if solicited. Pearson IV profile adjusted to the simulated profile, if possible.
`Ficheros .*`	Temporary files

Some tables has been stored in `Tables` directory



We have

`EDT_AsGa.lit`	3D electronic density for AsGa. It has been generated by using N33.den and N34.den files. Little endian (arch. Intel) binary format
`Zel3433.dat`	Nuclear stopping table for Z1=34 and Z2=33 atoms using ZBL screening
`Zel3431.dat`	Idem for Z1=34 and Z2=31
`InelLocal_33_34.dat`	Local inelastic stopping between Z1=33 and Z2=34 atoms
`InelLocal_31_34.dat`	Local inelastic stopping between Z1=31 and Z2=34 atoms
`InelNonLocal_34_03_00_1.70.dat`	Non local inelastic stopping (electronic stopping power) between Z=34 and the target material(AsGa) with our (03) stopping model and with a ZBL screening (00) and Rs0=1.70