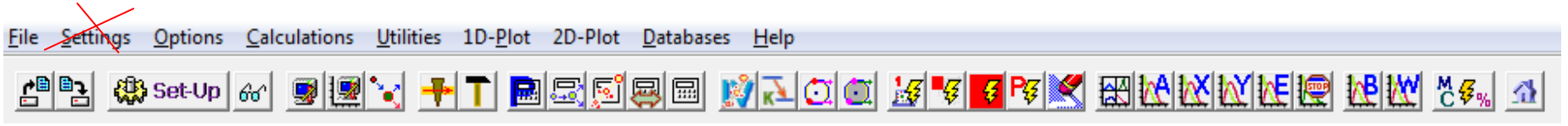
LISE^{++} development : v.9.10.*** -- different

1. **Main menu modifications:**
   - *Gadget and menu orders have been changed*
   - *New item "Physics Models"*
2. **Range table up to 50 AGeV**
3. **Number of blocks increased up to 500**
4. **Plots:**
   - *Plotting method : V-Histogram*
   - *1D-plot : user line thickness*
5. **Modification in "Find_Simple_Wedge_Anlge" subroutine for zero-dispersion of the 2nd half**
6. **Range Gas Cell : modifications of energy loss distribution for material passing and stopping**
7. **Angular Momentum in the Plots of the "Excitation energy of prefragments" dialog**
8. **Others up to 9.10.59**
9. **MC output to file : update (v.163)**
10. **Spikes in energy distributions (v.245)**
11. **$Q_{optimal}$ value in Two-body mode of the Kinematics Calculator (v.279)**
12. **Others from 9.10.60**

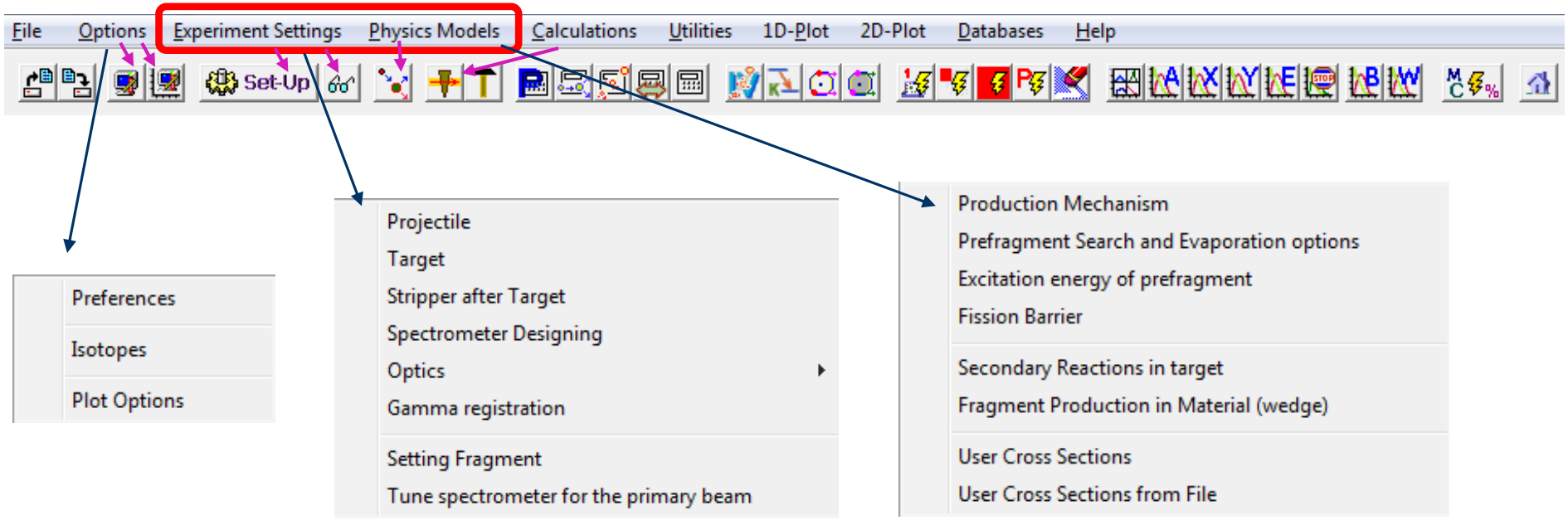
Main menu modifications

- *Menu and gadget and orders have been changed*
- *New item "Physics Models"*

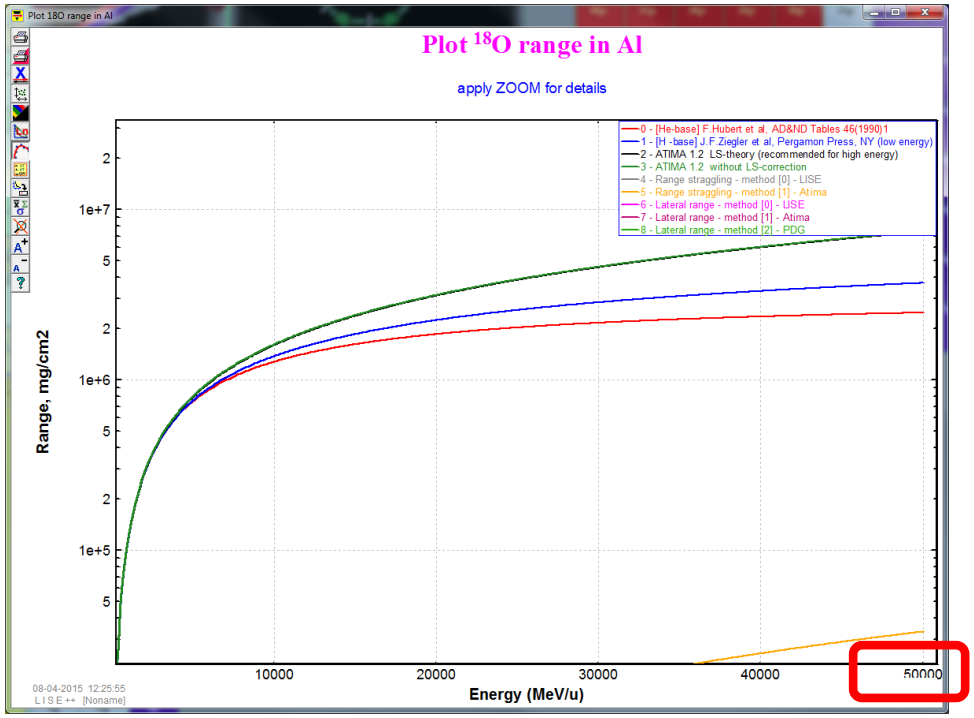
Version 9.9



Version 9.10

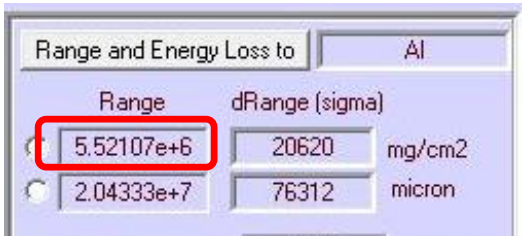


Range table: increasing from 3 AGeV up to 50 AGeV



H.W.'s request

LISE v.9.9



LISE v.9.10

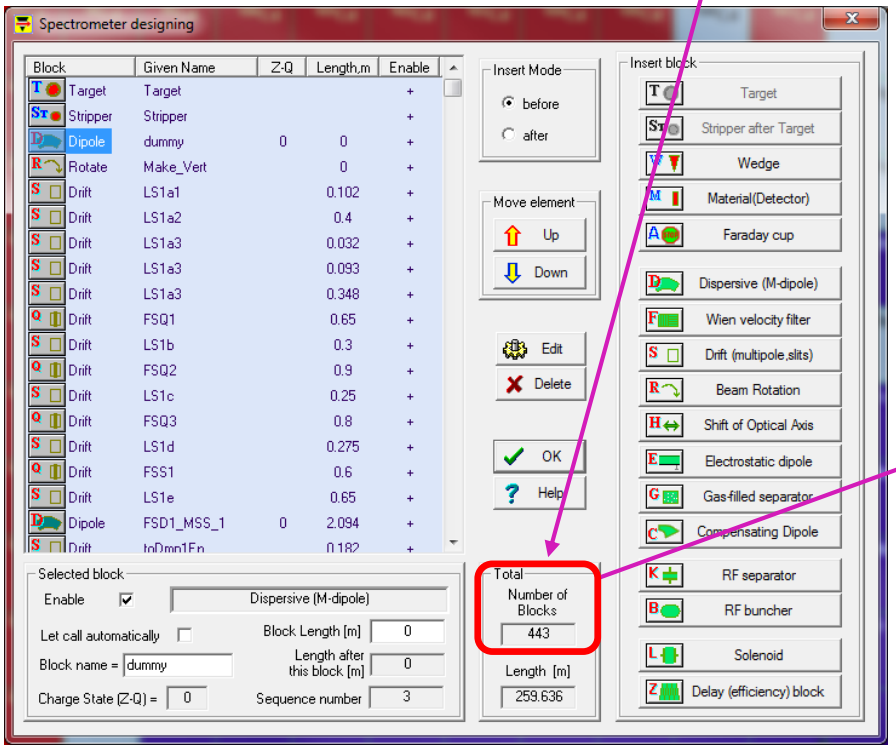
ATIMA

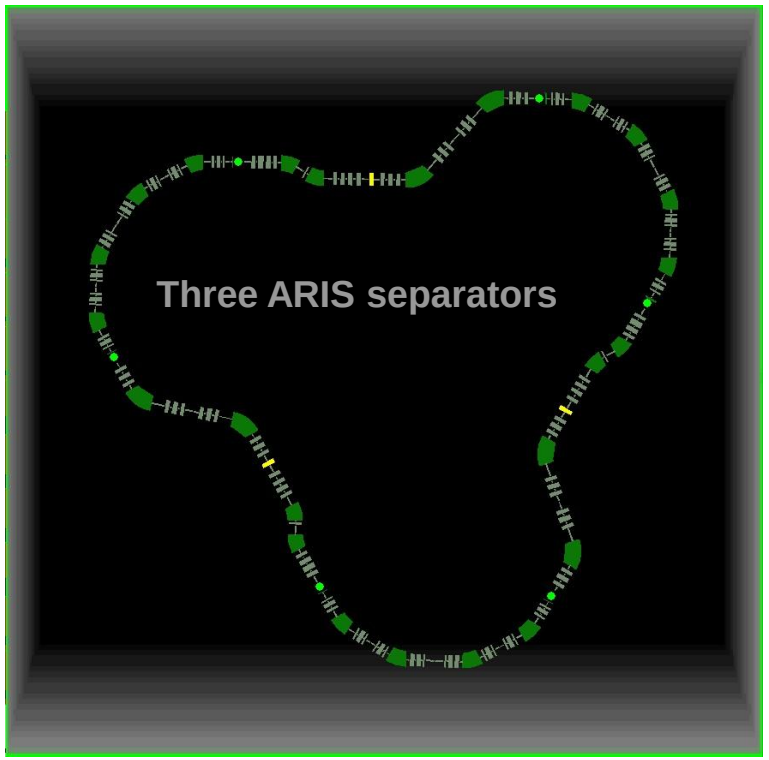
```
charge of fragment          [5.000000] ? 8
mass of fragment [amu]      [8.024606] ? 18
energy of fragment [MeV/u]  [308.500000] ? 27000
charge of material          [13] ?
mass of material            [27] ?
material thickness [mg/cm2] [100.000000] ? 1000
<I> read ATIMA splines for Al.
1: Z=13, A=26.981541, w=1.000000, pot=166.000000

 particle Z=8 A=18.000000 E=27000.000000 MeV/u
 target Z=13 A=27 T=1000.000000
 exit energy       : 26993.083984 MeV/u
 energy straggling : 2.658865 MeV/u (SR)
 range             : 4154606.915041 mg/cm2 -> 4153606.753428 mg/cm2
```

Number of blocks increased up to 500

M.P.'s request

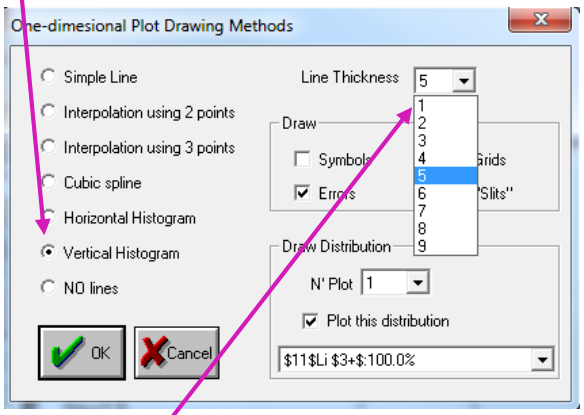
Example



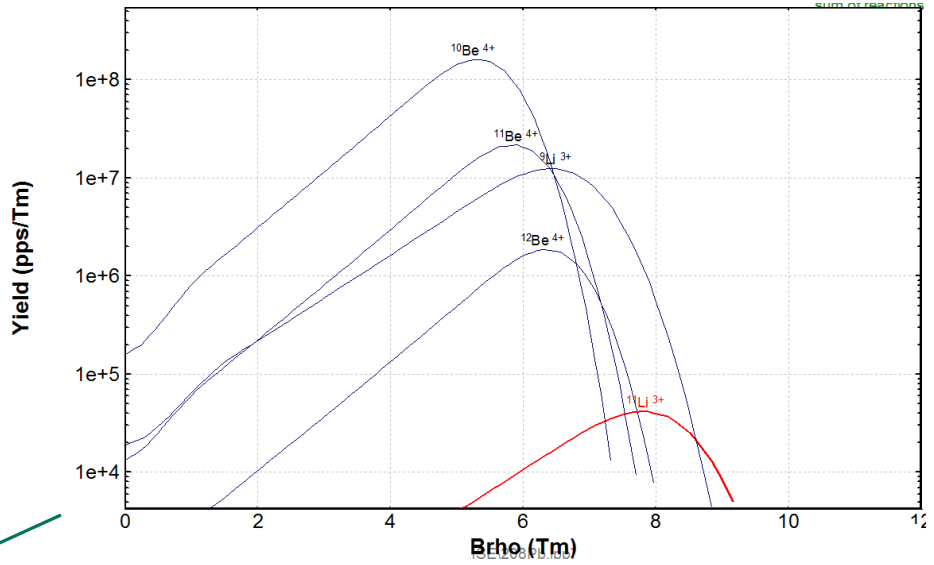


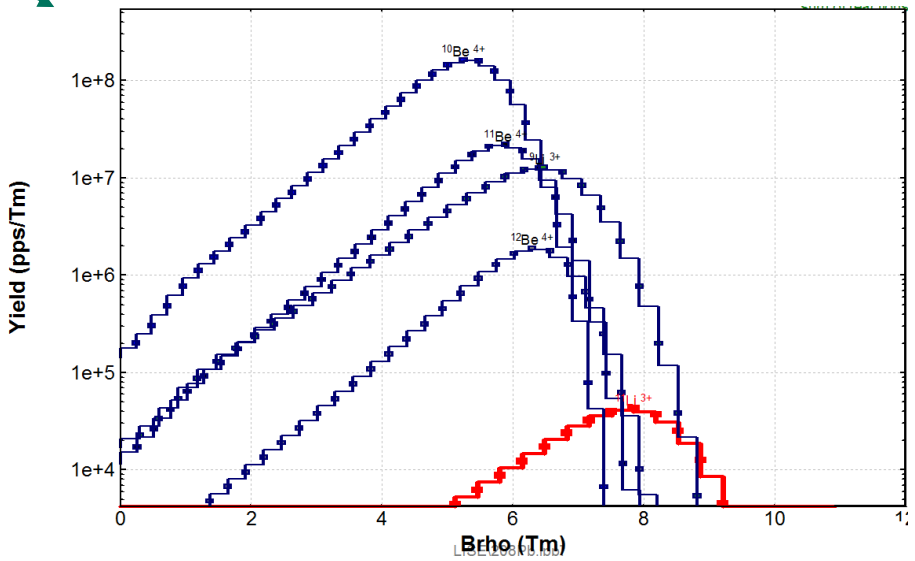
1D-Plotting updates

V-Histogram



User line thickness



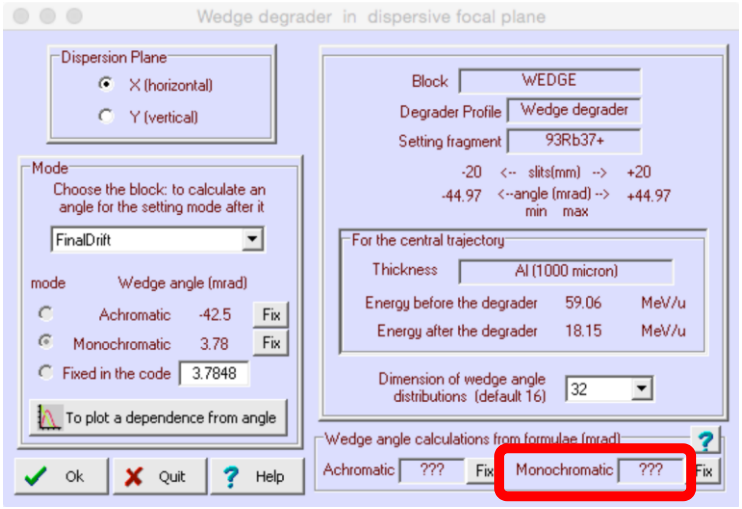


Modification in "Find_Simple_Wedge_Anlge" subroutine for zero-dispersion of the 2nd half

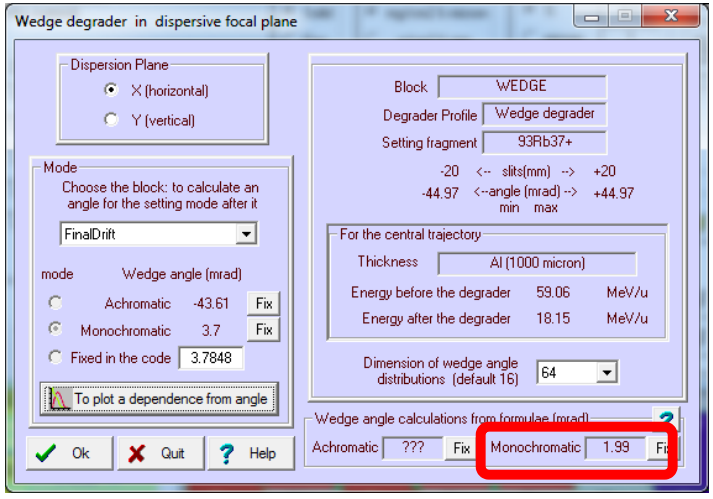
D.J.M.'s request

Local Dispersion between wedge and Final drift blocks is equal to 0.
No solution in achromatic case, but for monochromatic case should be

LISE v.9.9



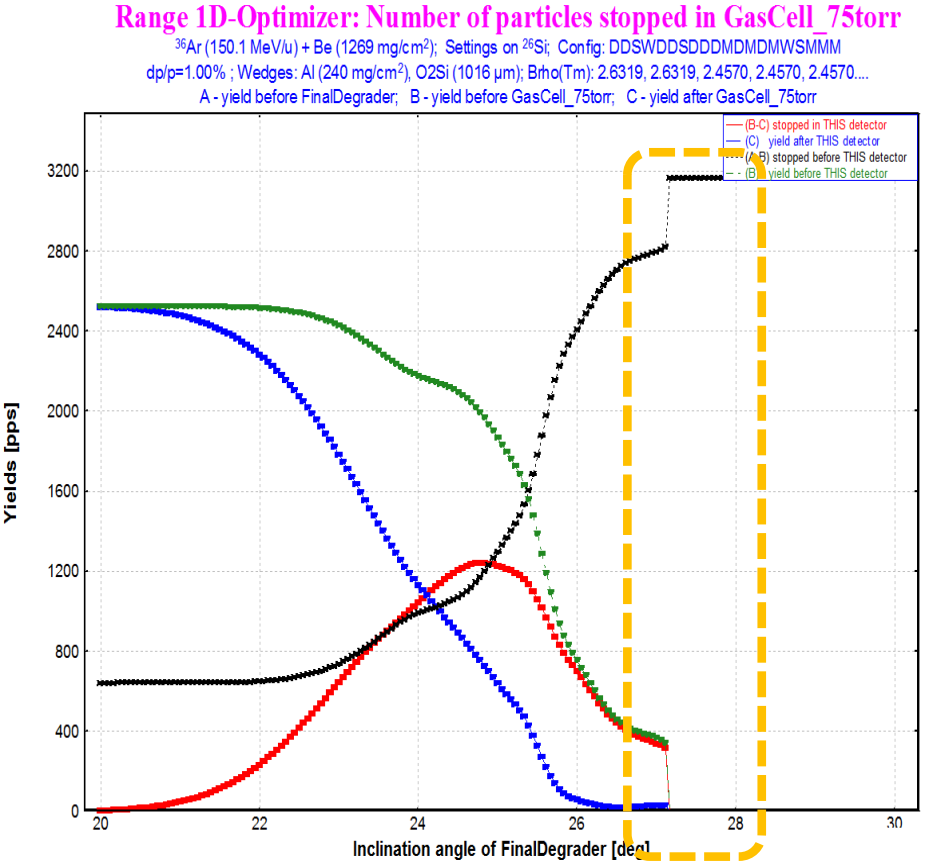
LISE v.9.10



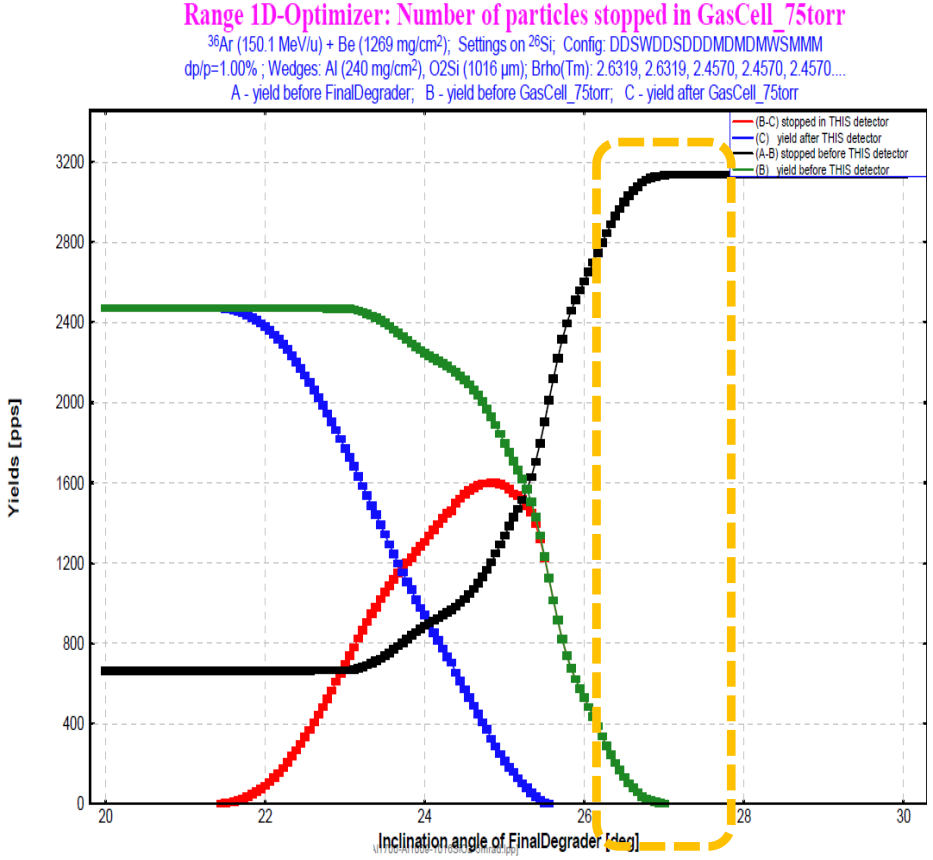
Range Gas Cell : modifications of energy loss distribution for material passing and stopping

D.J.M.'s request

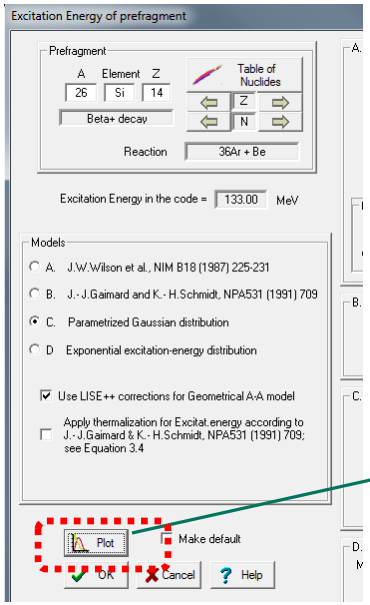
LISE v.9.9

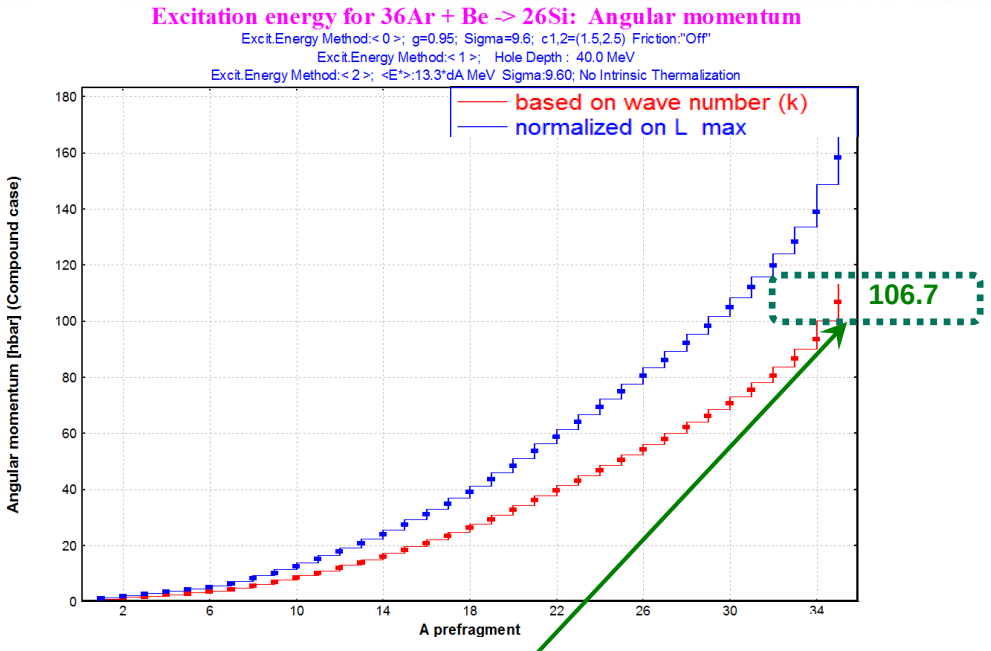


LISE v.9.10

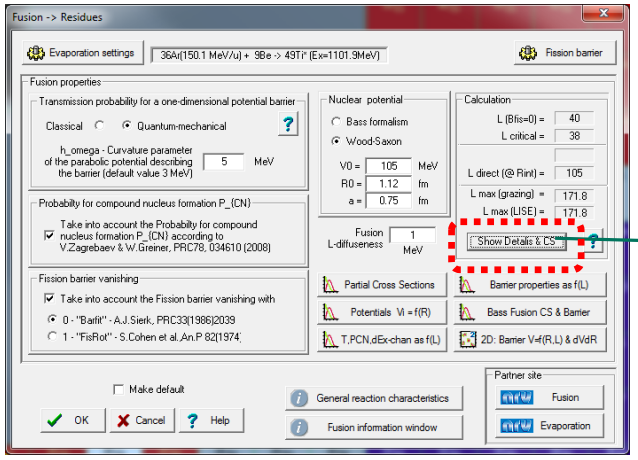


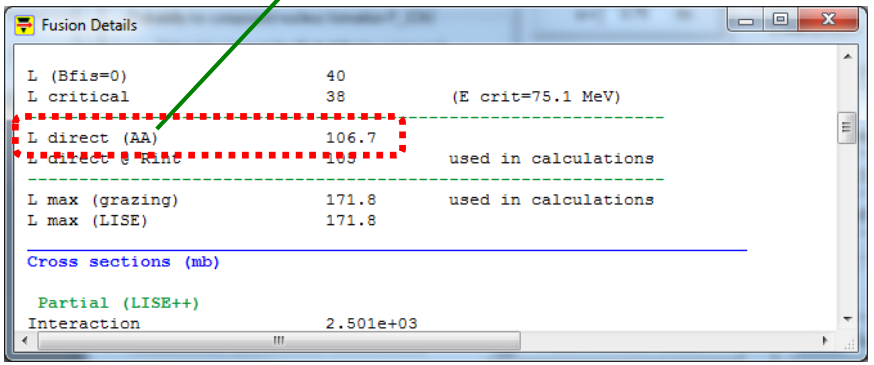
Angular Momentum in the Plots of the "Excitation energy of prefragments" dialog





Purpose : obtain L_direct from the Geometrical Abrasion-Ablation model assuming one nucleon stripping





Other modifications for version 9.10.01 - 9.10.59

1. Atomic number of target in the “Show Setup” frame
2. "Dummy" blocks modifications for the Scheme
3. Physical Calculator modifications for Range and degrader values
4. Plot1 legend size
5. Energy loss : MaxZtargetHubert=92, NumberTabELOSS = 100
6. Momentum “L” is new parameter of the “S_Element” class for Abrasion-Ablation
7. New class "TListShowWindow“ :
   TShowMCtrans based on TListShowWindow
   W_ShowCalc based on TListShowWindow
   Correction for overall transmission in the ShowCalc window
   ShowCalc -- modification for charge state numbers (%-3d format)
   Bug correction in the WShow subroutine
   Upgrade The ShowValues window class in the Fusion dialog
8. Reaction characteristics from Energy : corrections
9. “Custom shape degrader" dialog: option to skip energy/position calculations in polynomial mode

http://lise.nscl.msu.edu/9_10/9_10_279_Qoptim.pdf