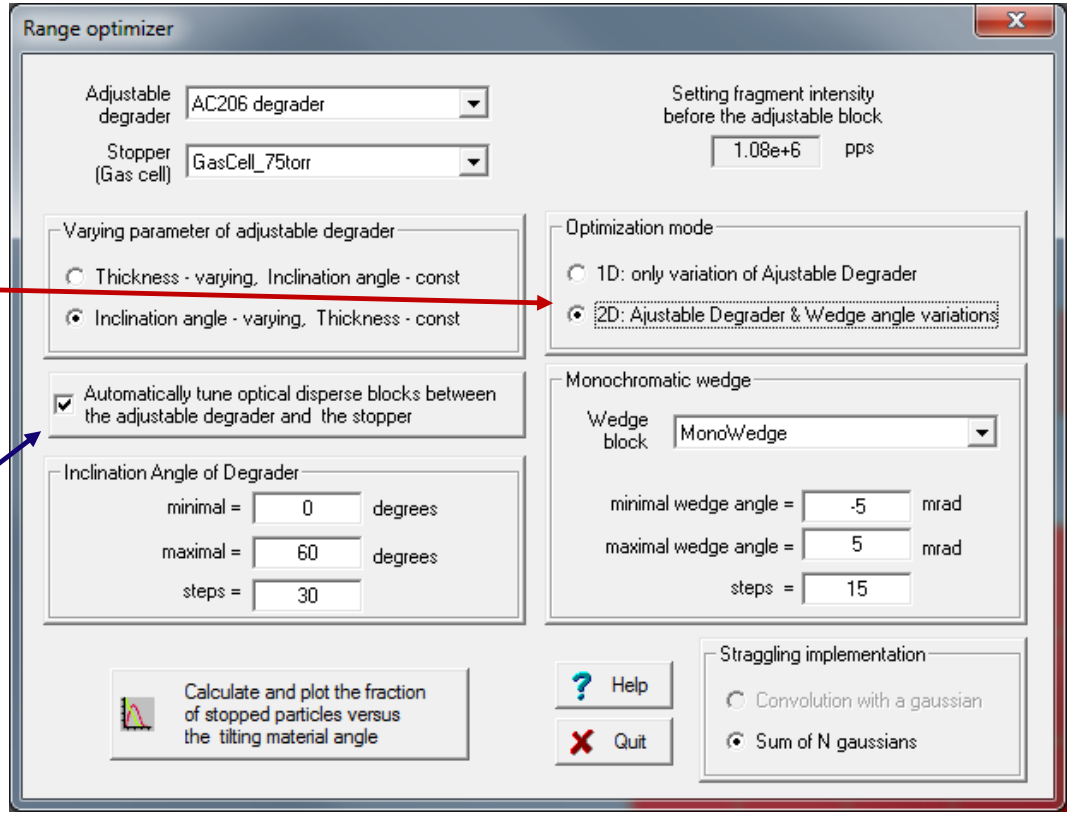
Range optimizer (Gas cell utility) update

v.9.8.7
from 01/09/14

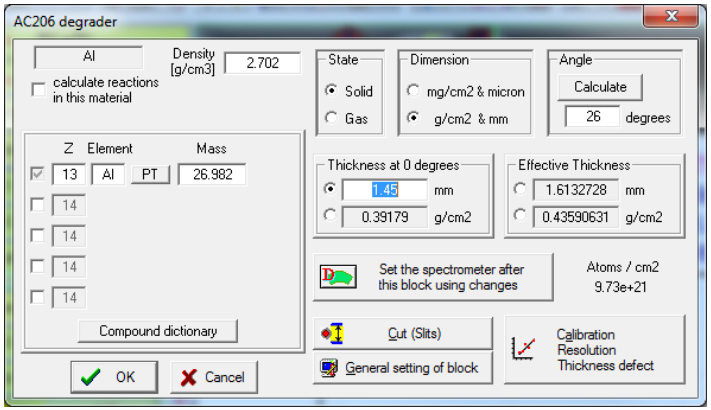
- **2D optimization : wedge angle & adjustable degrader**
- **Update for Save and Restore Brho-values and Wedge properties**
- **New option : recalculate optics between materials during optimizations**

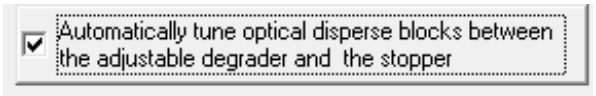


v.9.8.23
from 01/27/14
update

The presentation has been updated on 12/28/2014 to include the 9.8.23 updates

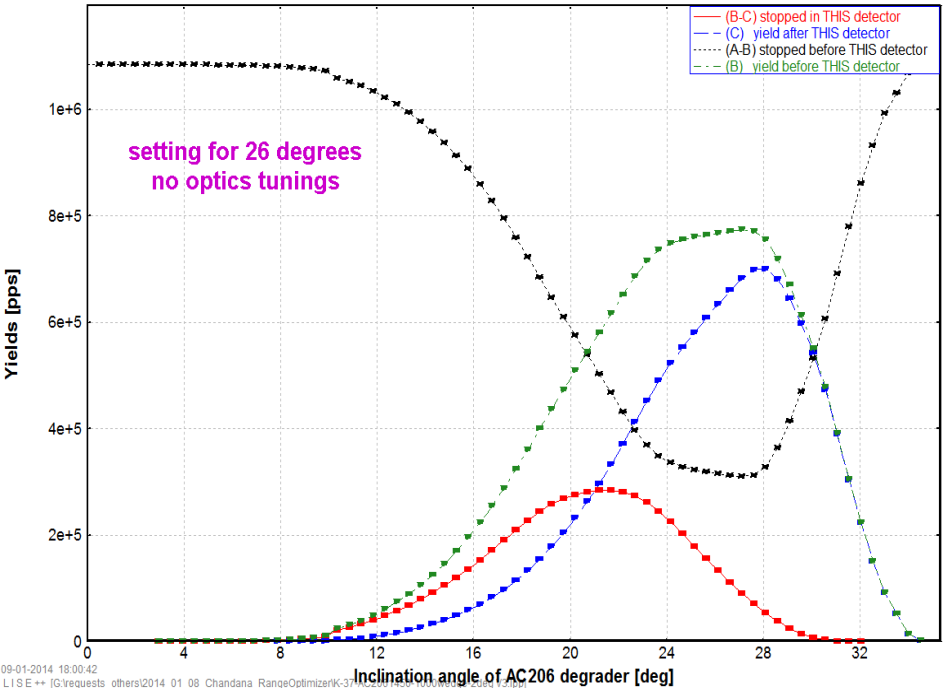
New option : recalculate optics between materials during optimizations





Range 1D-Optimizer: Number of particles stopped in GasCell_75torr

^{40}Ca (140.0 MeV/u) + Be (957.24 mg/cm^2); Settings on ^{37}K; Config: DDSWDDSDDDMDMMDMWSMMM
dp/p=1.00% ; Wedges: Al (145.55 mg/cm^2), O2Si (1000 µm); Brho(Tm): 2.6931, 2.6931, 2.5434, 2.5434, 2.5434....
A - yield before AC206 degrader; B - yield before GasCell_75torr; C - yield after GasCell_75torr



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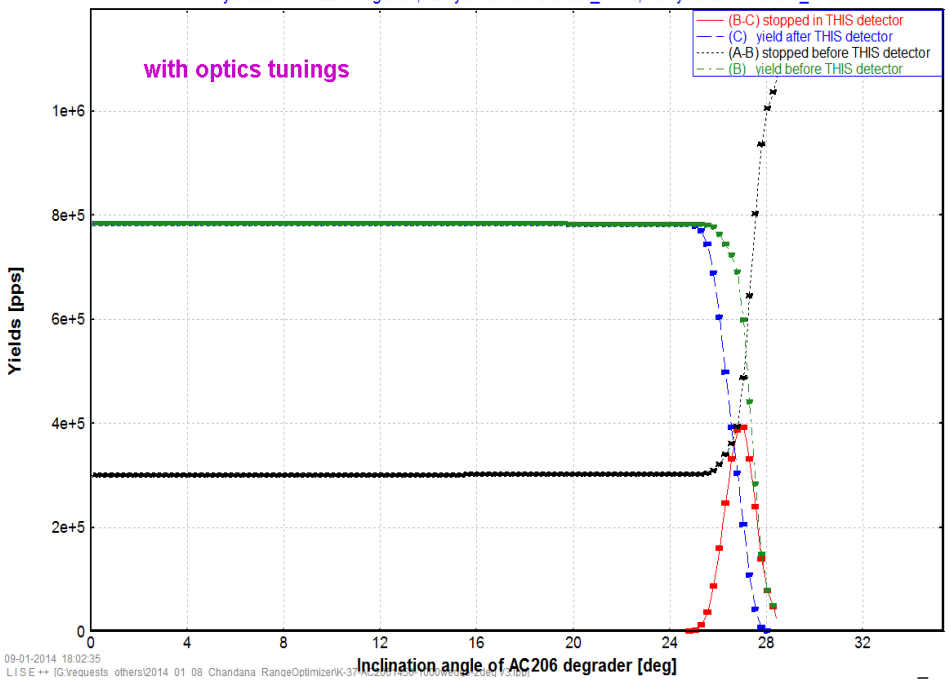


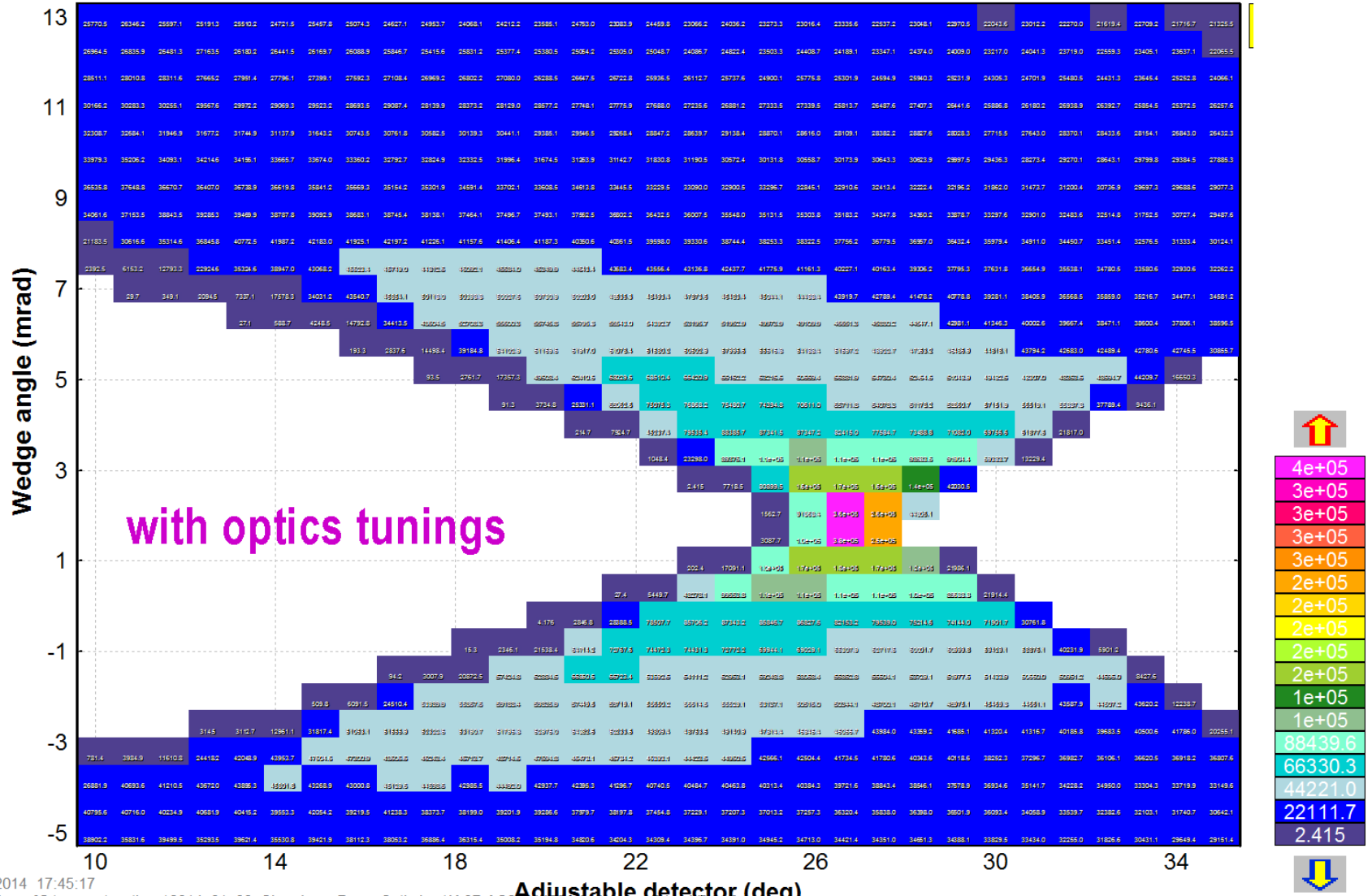
2D optimization : wedge angle & adjustable degrader

Range 2D-Optimizer: Number of particles stopped in GasCell_75torr

^{40}Ca (140.0 MeV/u) + Be (957.24 mg/cm^2); Settings on ^{37}K; Config: DDSWDDSDDDMDMMDMWSMMM

dp/p=1.00% ; Wedges: Al (145.55 mg/cm^2), O2Si (1000 µm); Brho(Tm): 2.6931, 2.6931, 2.5434, 2.5434, 2.5434....

Adjustable degrader: "AC206 degrader"; Wedge block: "MonoWedge"; max(3.76e+05) @ x=26.67 & y=1.60



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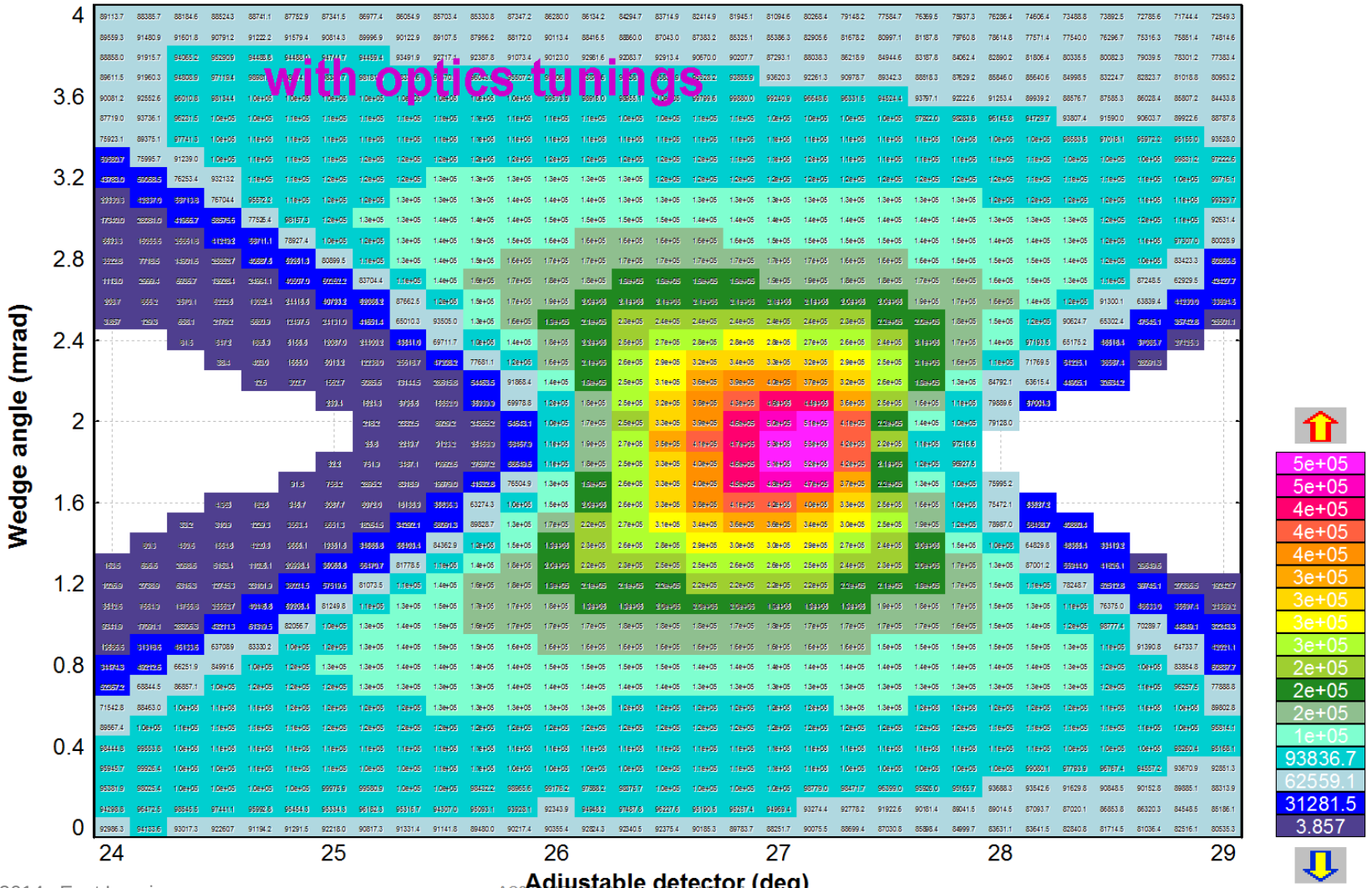
= ++ [G:\requests_others\2014_01_08_Chandana_RangeOptimizer\K-37-AC206f450-1000wedge-2deg v3.lpp]

2D optimization : wedge angle & adjustable degrader

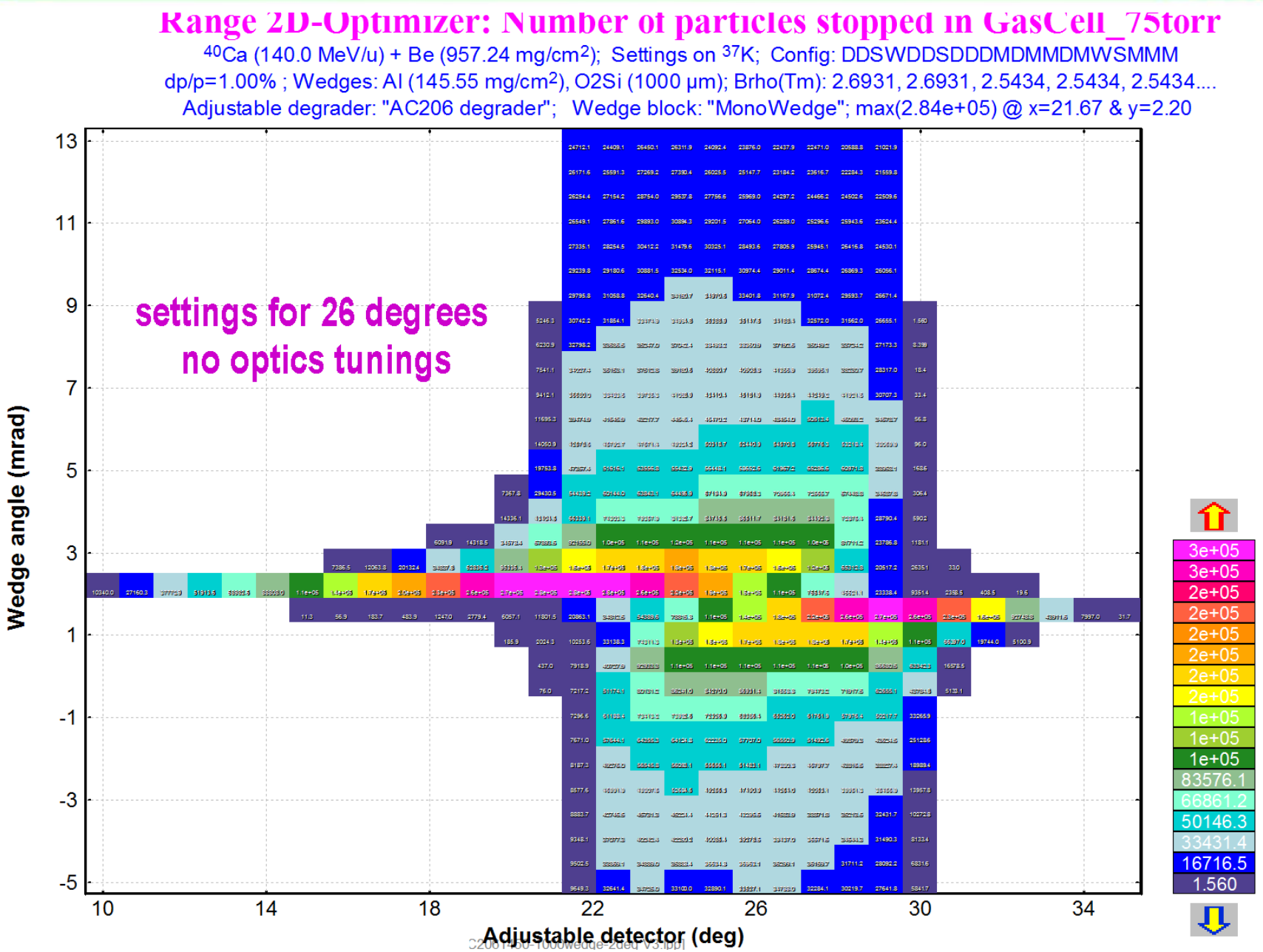
Zoom of the previous plot

Range 2D-Optimizer: Number of particles stopped in GasCell_75torr

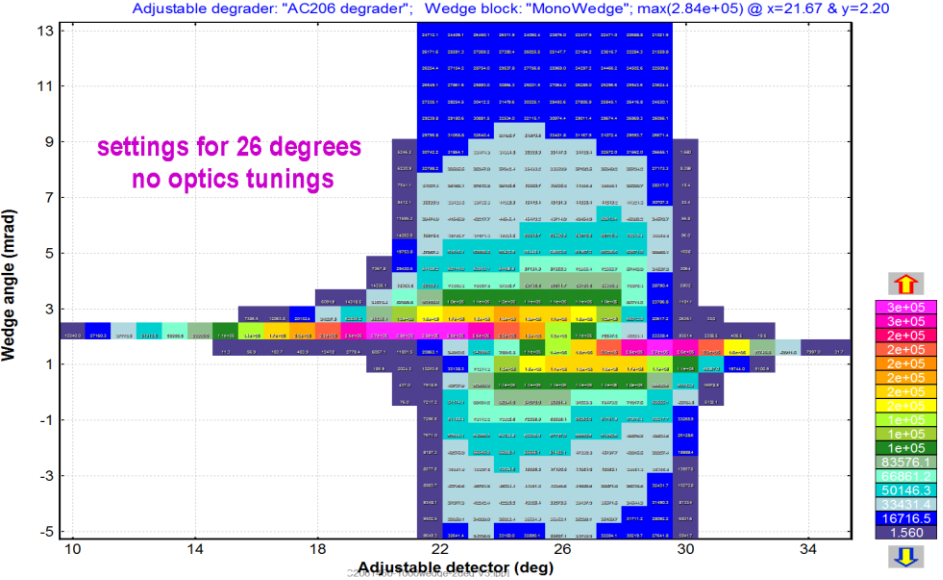
^{40}Ca (140.0 MeV/u) + Be (957.24 mg/cm^2); Settings on ^{37}K; Config: DDSWDDSDDDMDMMDMWSMMM
dp/p=1.00% ; Wedges: Al (145.55 mg/cm^2), O2Si (1000 µm); Brho(Tm): 2.6931, 2.6931, 2.5434, 2.5434, 2.5434....
Adjustable degrader: "AC206 degrader"; Wedge block: "MonoWedge"; max(5.32e+05) @ x=27.00 & y=1.90

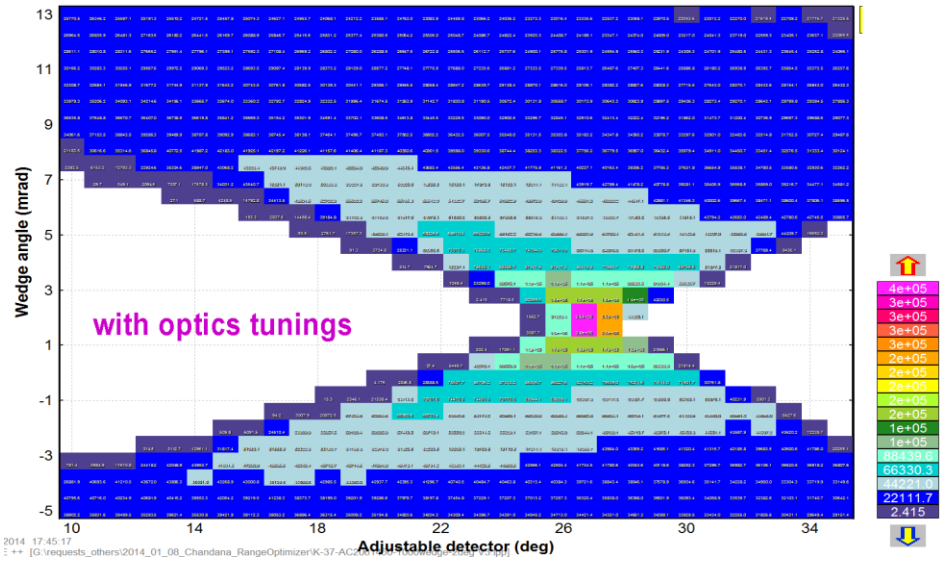


2D optimization : wedge angle & adjustable degrader

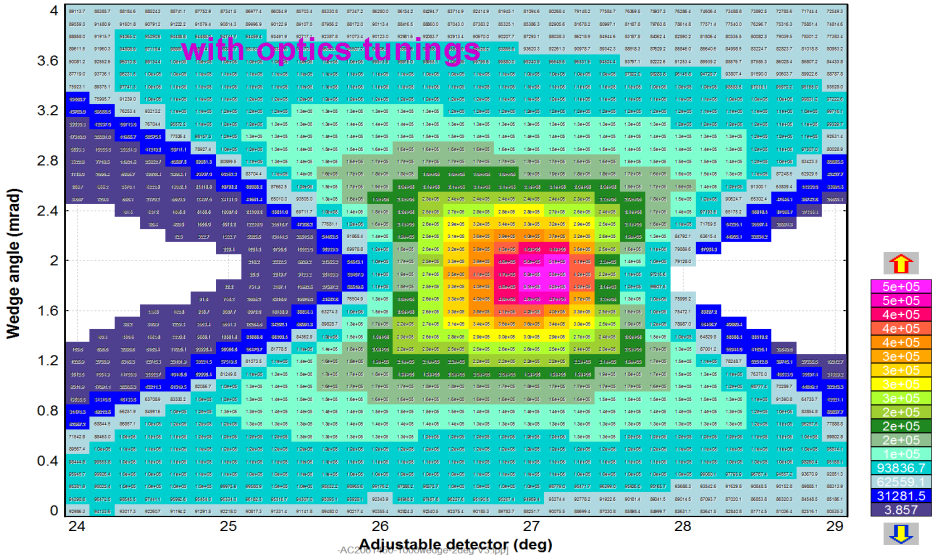
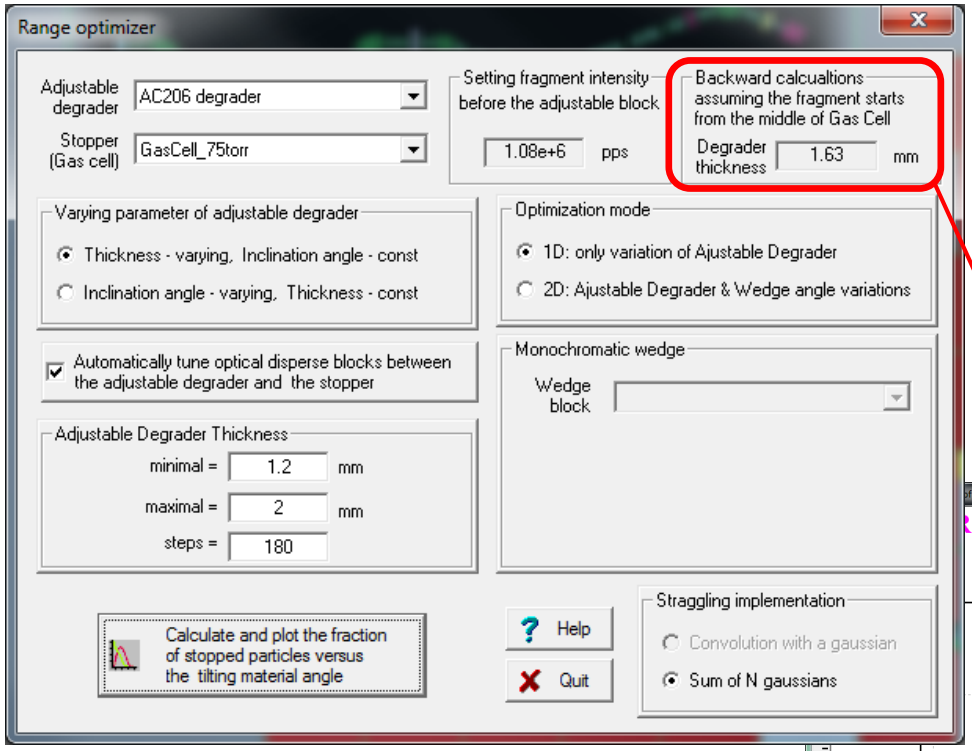
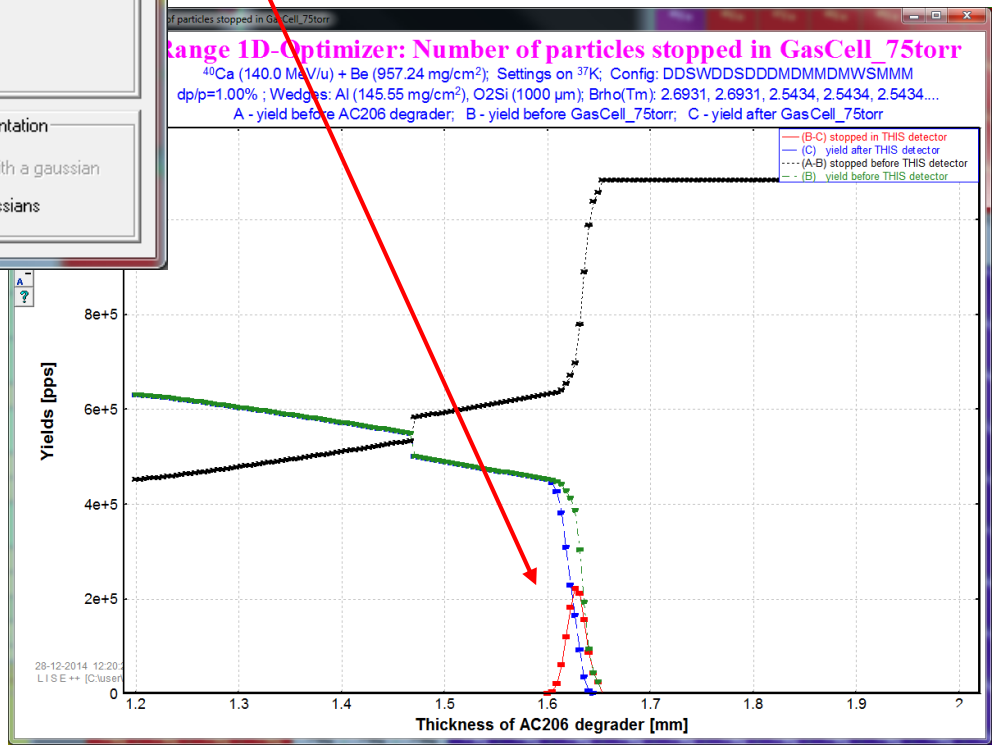


Yield sensitivity from wedge angle





We can see strong sensitivity of yield from wedge angle.
Optimum wedge angle is based on dispersion of the dispersive block, where wedge is located.
Therefore, by changing dispersion (by quads for example) it is possible to find maximum yield which correspond to non-adjustable angle of the wedge



v.9.8.23 : Backward calculations to estimate a thickness of degrader