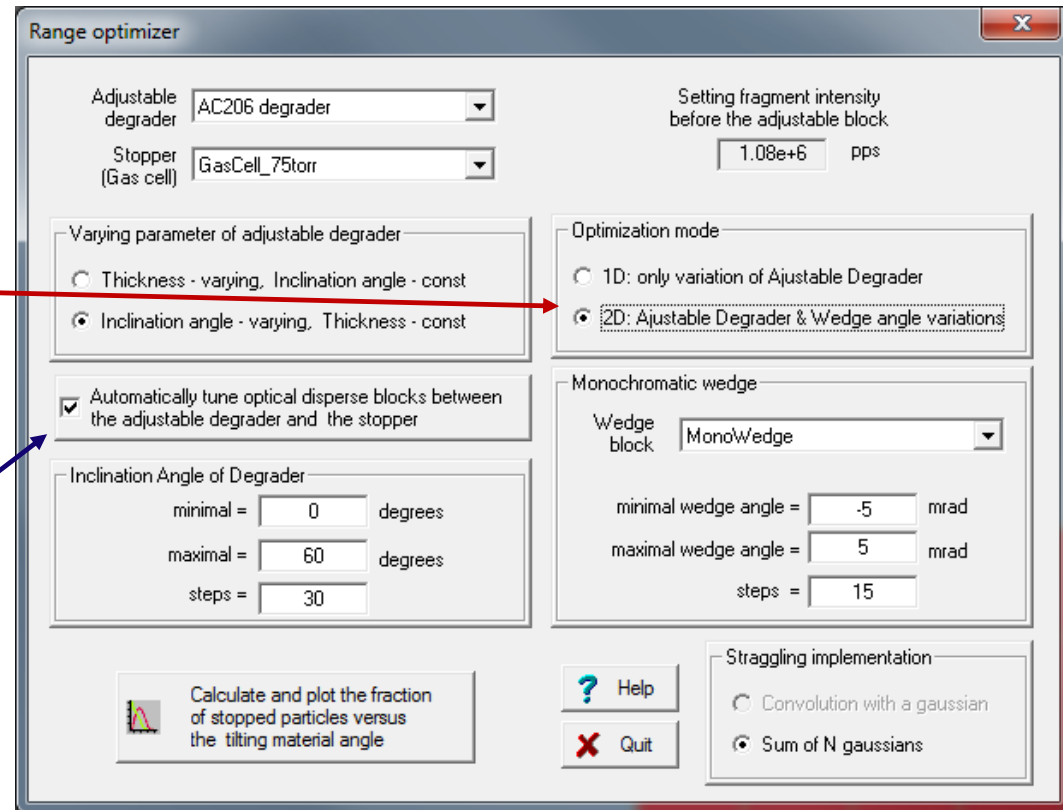


v.9.8.7  
from 01/09/14

- **2D optimization : wedge angle & adjustable degrader**

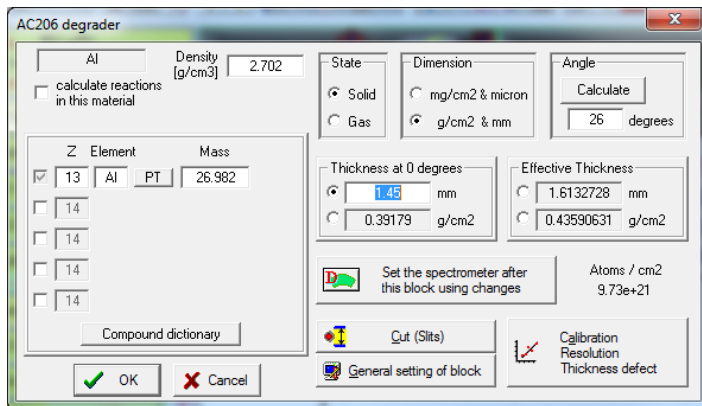
- **Update for Save and Restore Brho-values and Wedge properties**

- **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

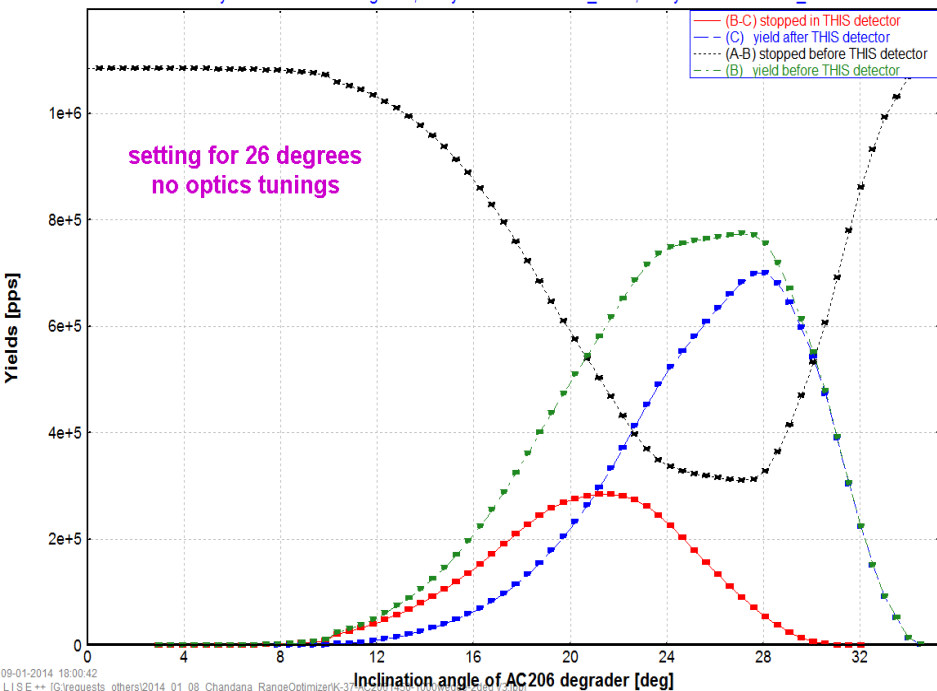


Automatically tune optical disperse blocks between the adjustable degrader and the stopper

Automatically tune optical disperse blocks between the adjustable degrader and the stopper

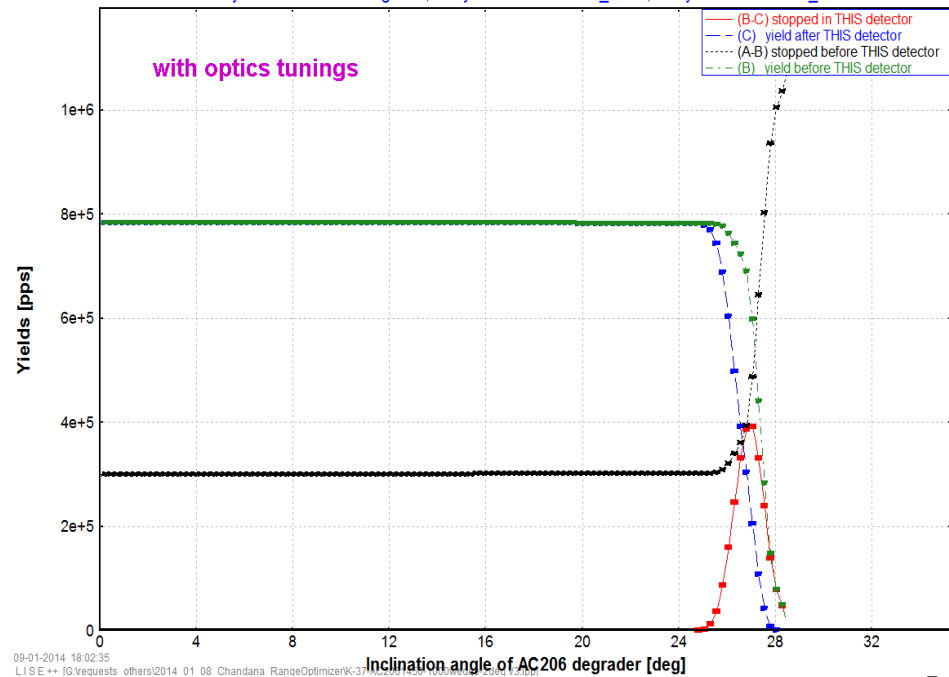
## Range 1D-Optimizer: Number of particles stopped in GasCell\_75torr

<sup>40</sup>Ca (140.0 MeV/u) + Be (957.24 mg/cm<sup>2</sup>); Settings on <sup>37</sup>K; Config: DDSWDDSDDDMDMMDMWSMMM  
 dp/p=1.00% ; Wedges: Al (145.55 mg/cm<sup>2</sup>), 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



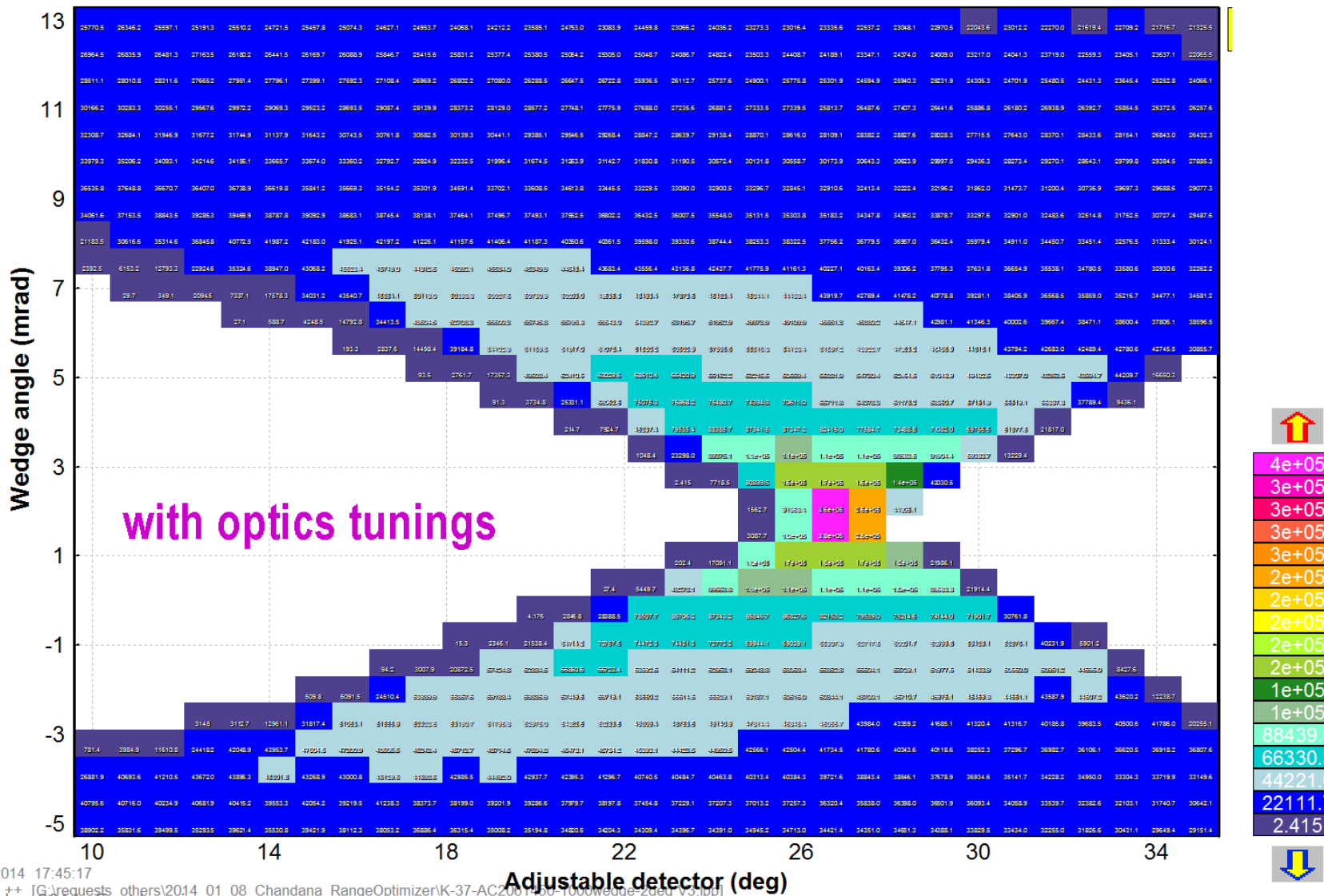
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 A - yield before AC206 degrader; B - yield before GasCell\_75torr; C - yield after GasCell\_75torr



## Range 2D-Optimizer: Number of particles stopped in GasCell\_75torr

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 dp/p=1.00% ; Wedges: Al (145.55 mg/cm<sup>2</sup>), O2Si (1000  $\mu\text{m}$ ); 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



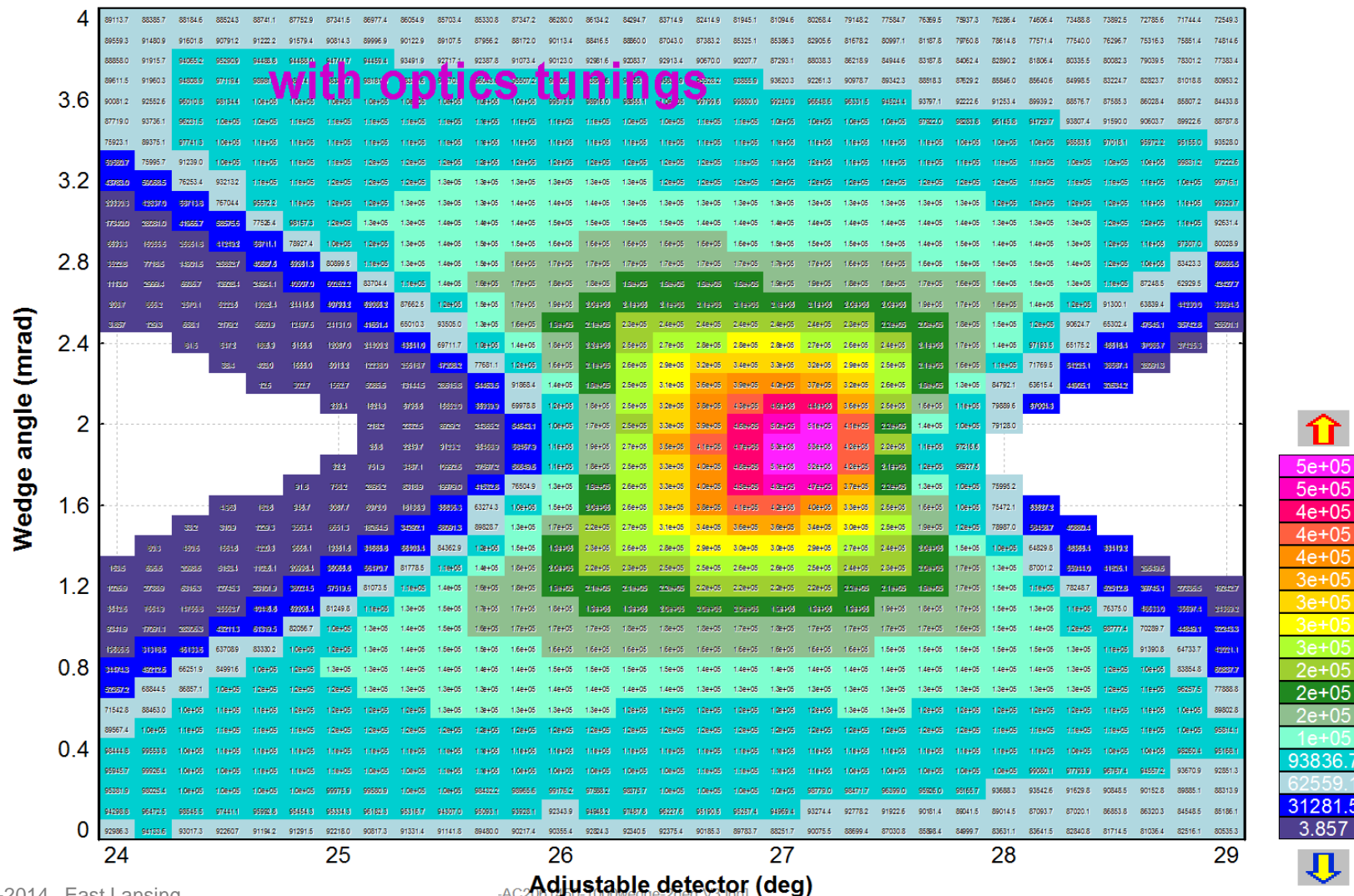
## Zoom of the previous plot

**Range 2D-Optimizer: Number of particles stopped in GasCell\_75torr**

<sup>40</sup>Ca (140.0 MeV/u) + Be (957.24 mg/cm<sup>2</sup>); Settings on <sup>37</sup>K; Config: DDSWDDSDDDMDMMWMMMM

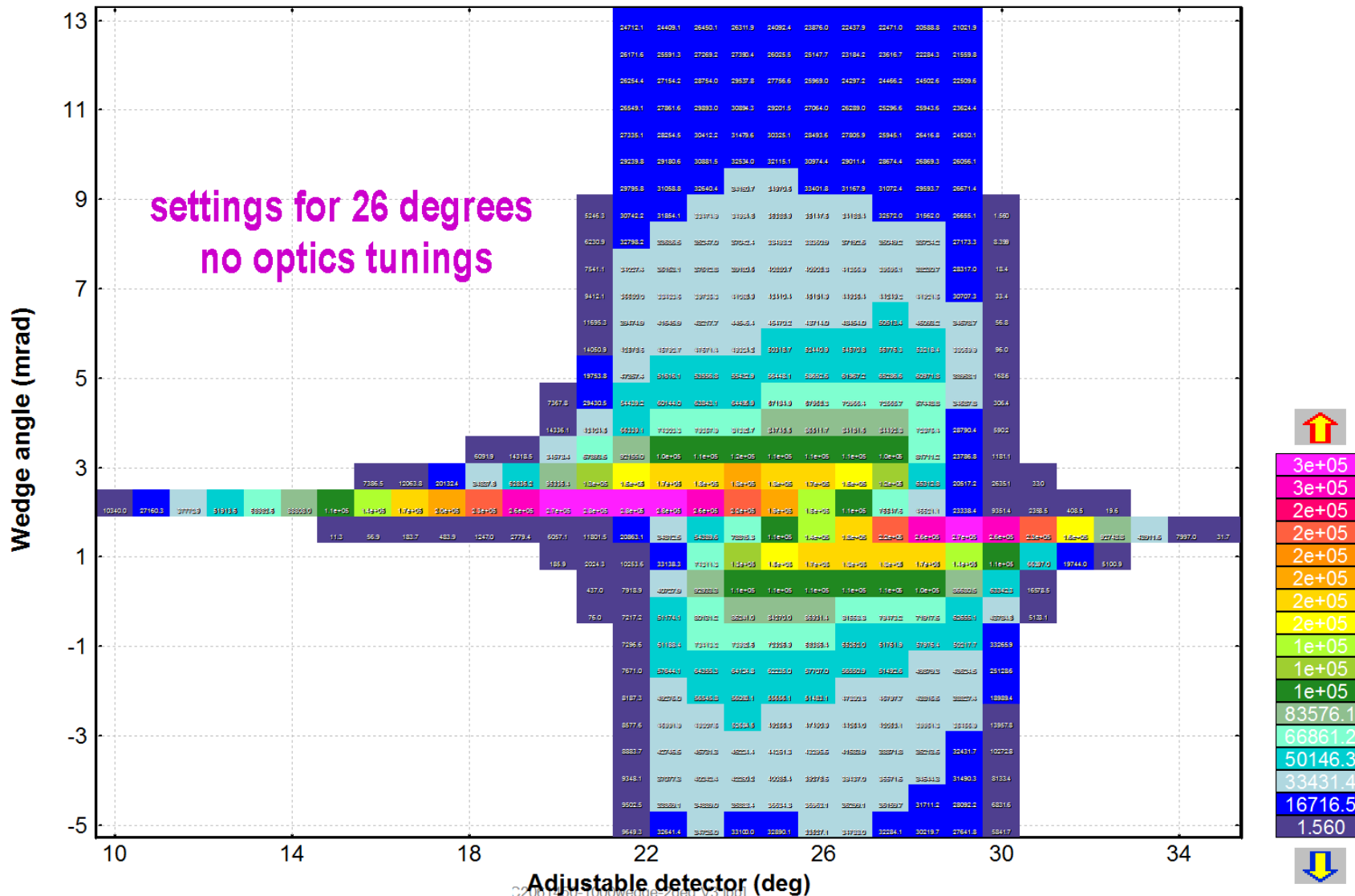
dp/p=1.00% ; Wedges: Al (145.55 mg/cm<sup>2</sup>), O2Si (1000 μm); Brho(Tm): 2.6931, 2.6931, 2.5434, 2.5434, 2.5434....

Adjustable degrader: "AC206 degrader"; Wedge block: "MonoWedge"; max(5.32e+05) @ x=27.00 & y=1.90



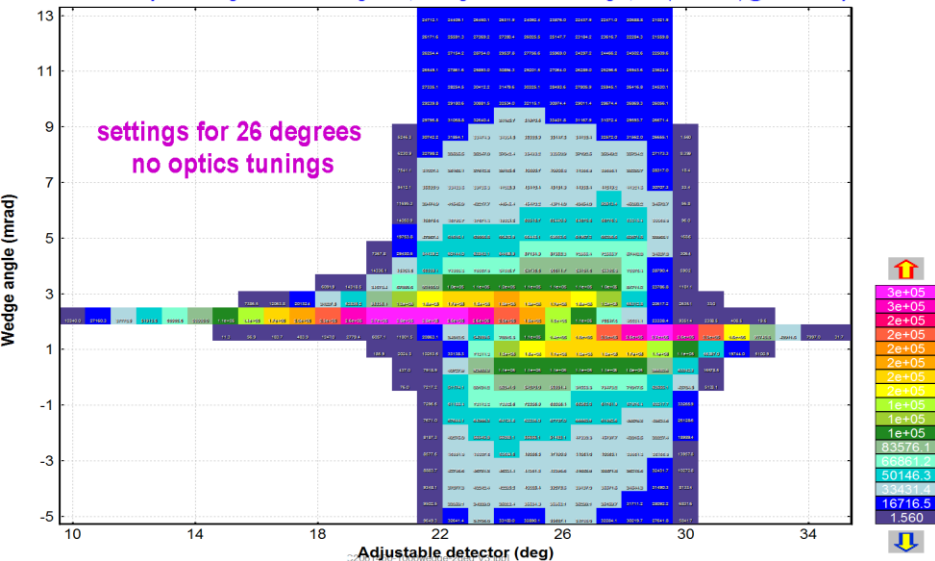
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$^{40}\text{Ca}$  (140.0 MeV/u) + Be (957.24 mg/cm<sup>2</sup>); Settings on  $^{37}\text{K}$ ; Config: DDSWDDSDDDMDMMDMWSMMM  
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 Adjustable degrader: "AC206 degrader"; Wedge block: "MonoWedge"; max(2.84e+05) @ x=21.67 & y=2.20



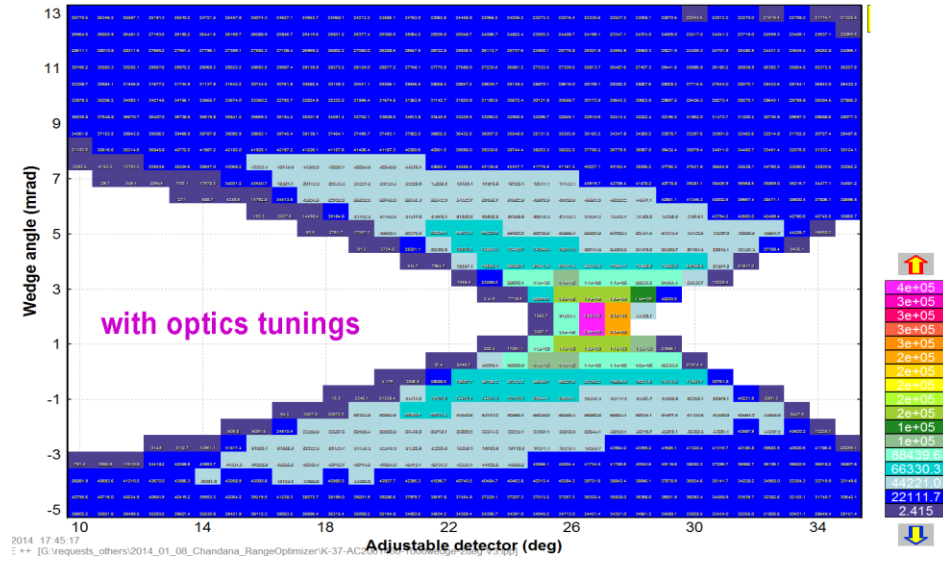
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<sup>40</sup>Ca (140.0 MeV/u) + Be (957.24 mg/cm<sup>2</sup>); Settings on <sup>37</sup>K; Config: DDSWDDSDDDMMDDMMWSMMM  
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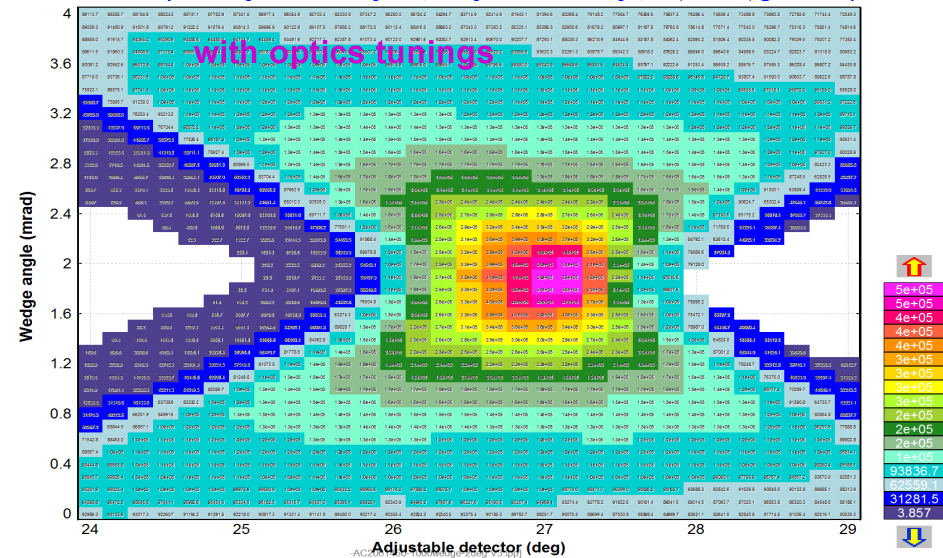
<sup>40</sup>Ca (140.0 MeV/u) + Be (957.24 mg/cm<sup>2</sup>); Settings on <sup>37</sup>K; Config: DDSWDDSDDDMMDDMMWSMMM  
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 Adjustable degrader: "AC206 degrader"; Wedge block: "MonoWedge"; max(3.76e+05) @ x=26.67 & y=1.60



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

## Range 2D-Optimizer: Number of particles stopped in GasCell\_75torr

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 Adjustable degrader: "AC206 degrader"; Wedge block: "MonoWedge"; max(5.32e+05) @ x=27.00 & y=1.90



**Range optimizer**

Adjustable degrader: AC206 degrader  
 Stopper (Gas cell): GasCell\_75torr  
 Setting fragment intensity before the adjustable block: 1.08e+6 pps  
 Backward calculations assuming the fragment starts from the middle of Gas Cell  
 Degrader thickness: 1.63 mm

Varying parameter of adjustable degrader:  
 Thickness - varying, Inclination angle - const  
 Inclination angle - varying, Thickness - const

Optimization mode:  
 1D: only variation of Adjustable Degrader  
 2D: Adjustable Degrader & Wedge angle variations

Monochromatic wedge:  
 Wedge block: [ ]

Adjustable Degrader Thickness:  
 minimal = 1.2 mm  
 maximal = 2 mm  
 steps = 180

Straggling implementation:  
 Convolution with a gaussian  
 Sum of N gaussians

Buttons: Help, Quit

Calculate and plot the fraction of stopped particles versus the tilting material angle

