

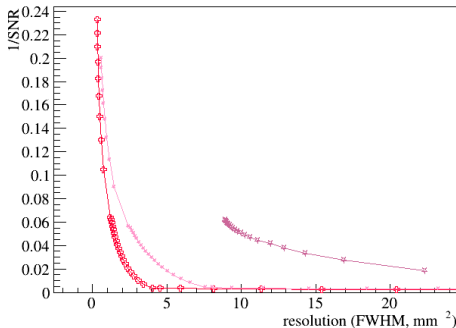
# Trade-off

A. Studen<sup>1</sup>

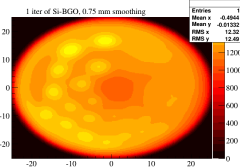
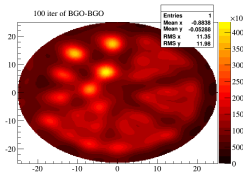
<sup>1</sup>IJS, Ljubljana

October 24, 2013

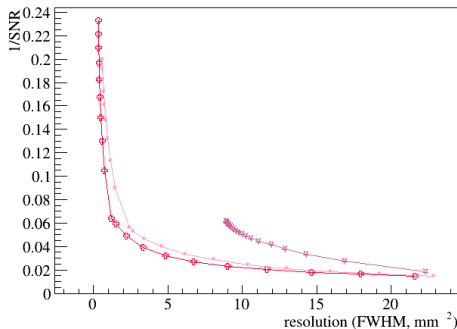
# Smoothing high-res data: iter 1



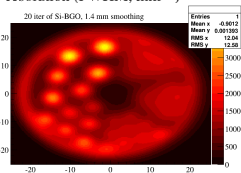
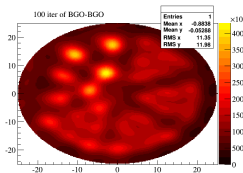
- For 1.4 mm.
- For Si-Si & Si-BGO iter from 1 to 20 by 1 and then by 20 to 200
- For BGO-BGO by 20 to 400
- Iter 1 of Si-Si and Si-BGO smoothed down
- Are these images equivalent?
- Seem to have similar resolution



# Smoothing high-res data: iter 20

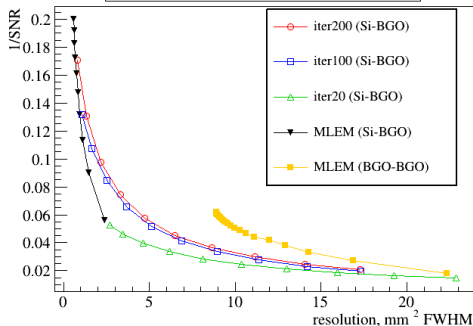


- For 1.4 mm.
- For Si-Si & Si-BGO by 20 to 200
- For BGO-BGO by 20 to 400
- Iter 20 of Si-Si and Si-BGO smoothed down
- Are these images equivalent?
- Seem to have similar resolution and contrast.

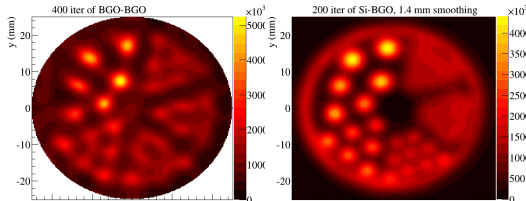


# Smoothing high-res data: iter 200

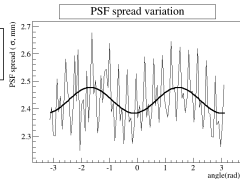
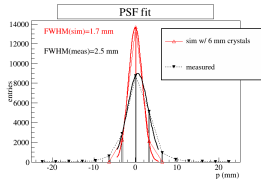
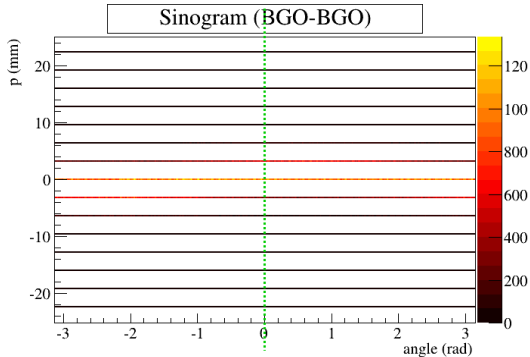
Trade-off for various smooting starting points



- Starting smoothing at images with different level of convergence.
- iter100 and iter200 seem sufficiently alike
- New convergence criterium?

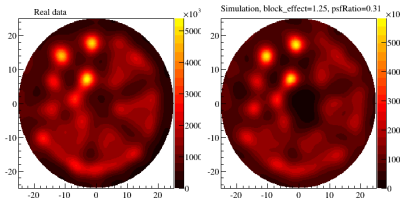
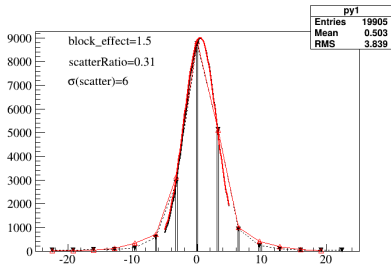


# Point source



- Point source data (20100901).
- twin source (!)
- gaus fits along p
- Width oscillates 2.3  $\leftrightarrow$  2.6
- For 6 mm crystals, 1.6 mm expected

# PSF fit: Point source



- Tweak simulation to match data.
- 
- $\text{PSF} = \text{PSF}(\text{peak}) + \text{PSF}(\text{scattering})$
- PSF(peak) convolution  
[positron range, acolinearity, crystal size, block effect]
- Block effect (ICS)  $\rightarrow$  crystal size = crystal size \* block\_effect
- Scattering to account for wide tails.
- Scattering ratio is portion of scattered events in sample.