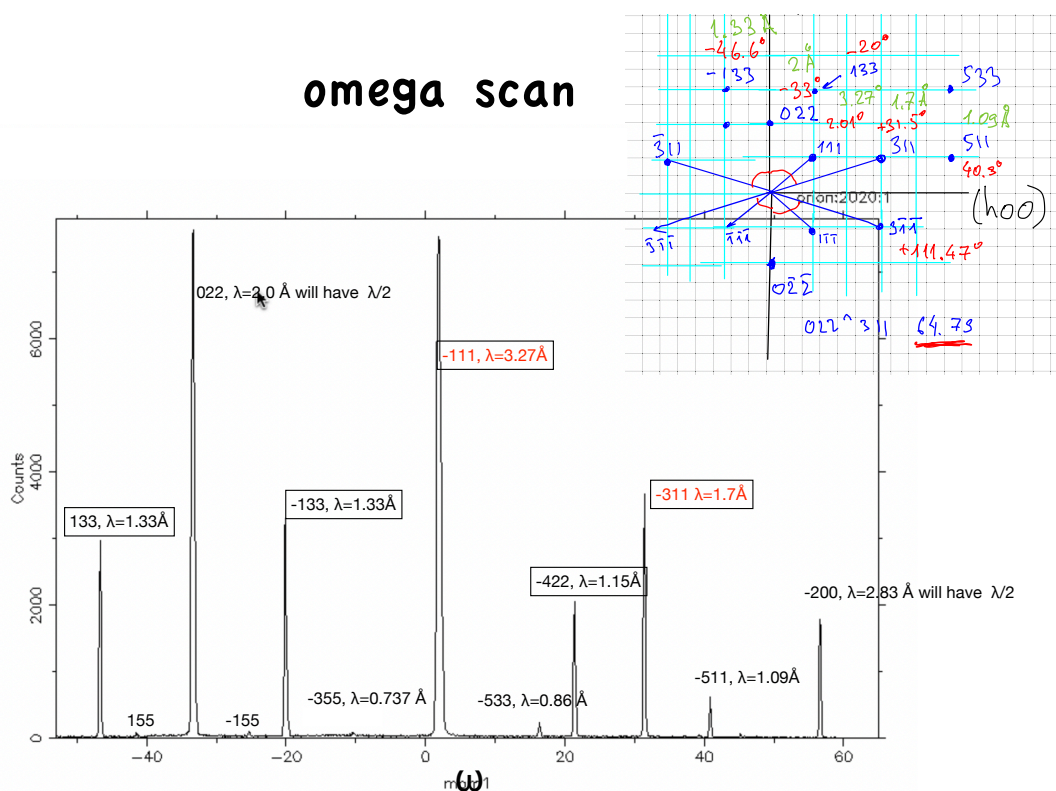


# Orion Calibration 2020

LiNbO<sub>3</sub>, 006-reflection green mark, fully centered in om, chi and stt.

Monochromator focusing motor: mcv1 = 0.9;

Omega scan of the new Ge monochromator (mom1 motor, wavelength values are estimations)



Pomjakushin diffraction

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**From refinement of LiNbO<sub>3</sub> we obtain:**

Mom1 = 2.033° → λ = 3.3 Å (relative intensity without sample = 1)

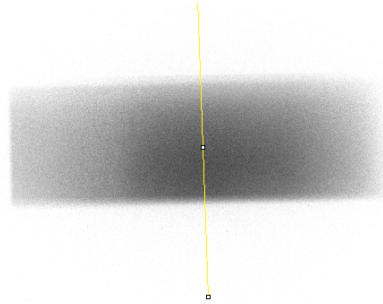
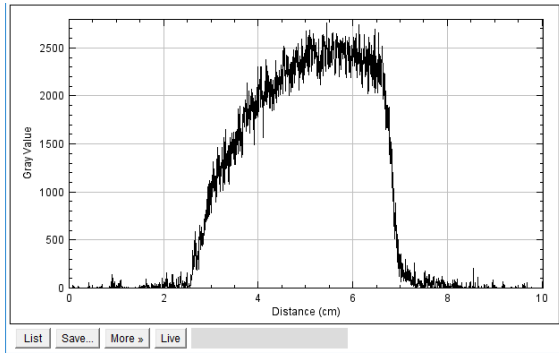
Mom1 = 21.52° → λ = 1.32 Å (relative intensity without sample ~ 1/3)

Mom1 = 31.54° → λ = 1.73 Å (relative intensity without sample ~ 1/2)

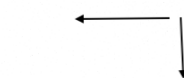
Other monochromator positions are not use due to second order contamination or because they have dramatic repercussions on other instruments of the same guide.

**Beam shape:**

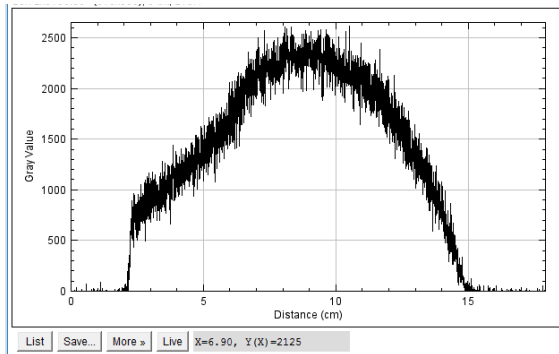
$\lambda = 3.3 \text{ \AA}$  @ 25 cm from the monitor



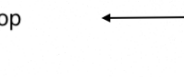
Top



Right of the monitor (from experimental area)

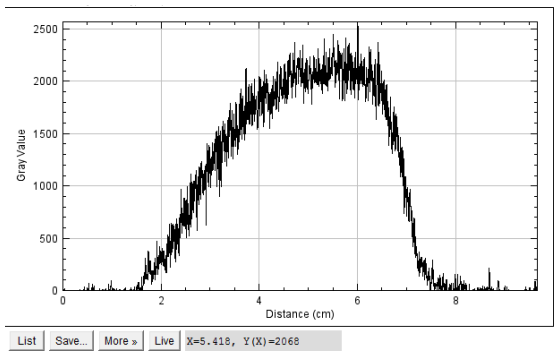


Top

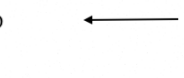


Right of the monitor (from experimental area)

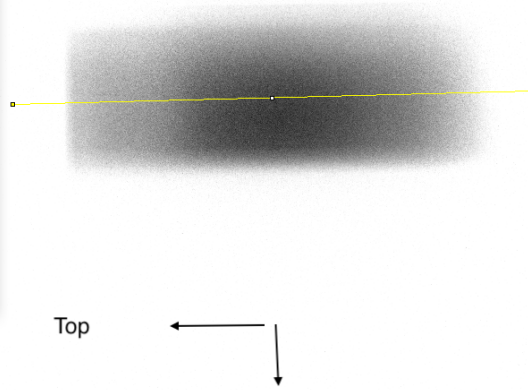
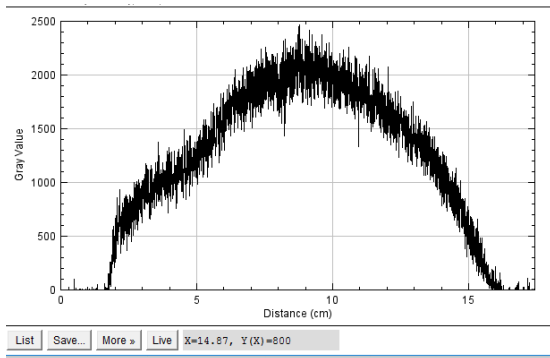
$\lambda = 3.3 \text{ \AA}$  @ 65 cm from the monitor



Top



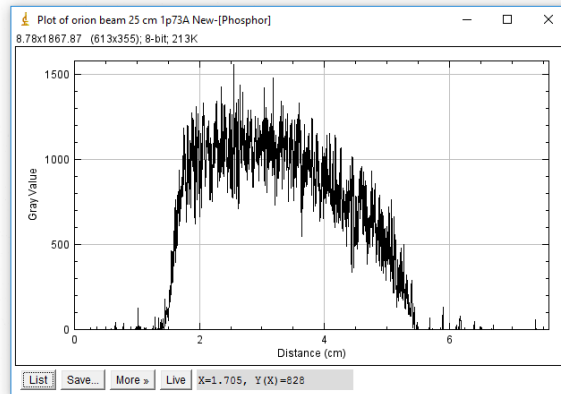
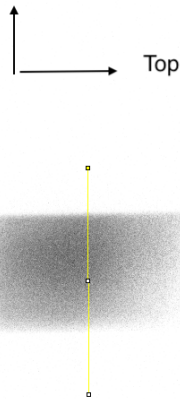
Right of the monitor (from experimental area)



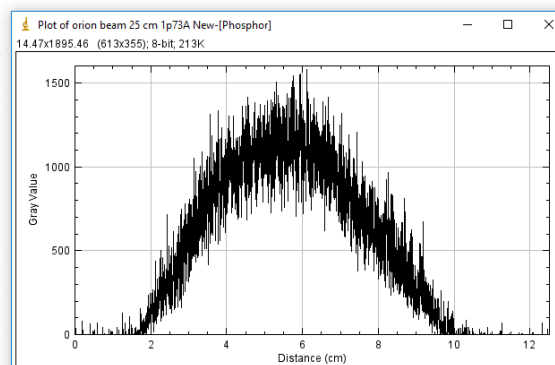
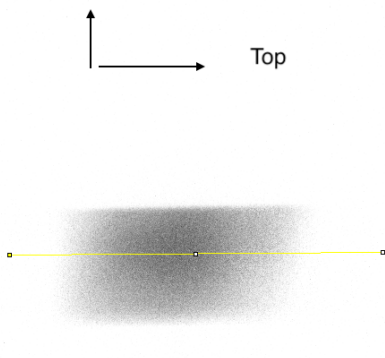
Right of the monitor (from experimental area)

$\lambda = 1.73 \text{ \AA}$  @ 25 cm from the monitor

Right of the monitor (from experimental area)



Right of the monitor (from experimental area)

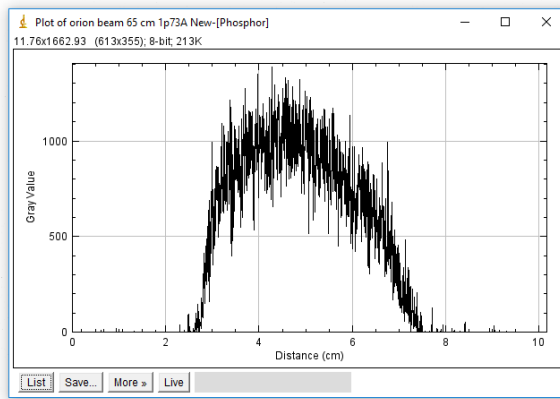
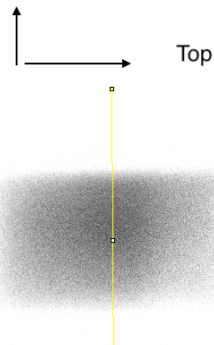


***Flux gains at monitor after new guide installation (compared to 2013 data for  $\lambda = 2 \text{ \AA}$ ):***

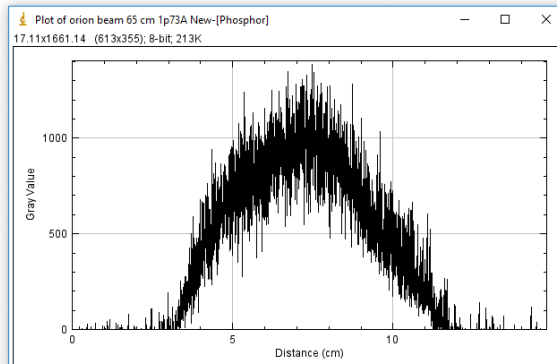
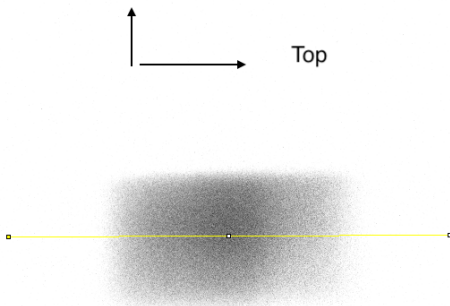
- $\lambda = 3.3 \text{ \AA}$        $\rightarrow$     x129
- $\lambda = 1.32 \text{ \AA}$      $\rightarrow$     x11
- $\lambda = 1.73 \text{ \AA}$      $\rightarrow$     x33

$\lambda = 1.73 \text{ \AA} @ 65 \text{ cm from the monitor}$

Right of the monitor (from experimental area)



Right of the monitor (from experimental area)



## Resolution

Rocking curves on the 006 reflection

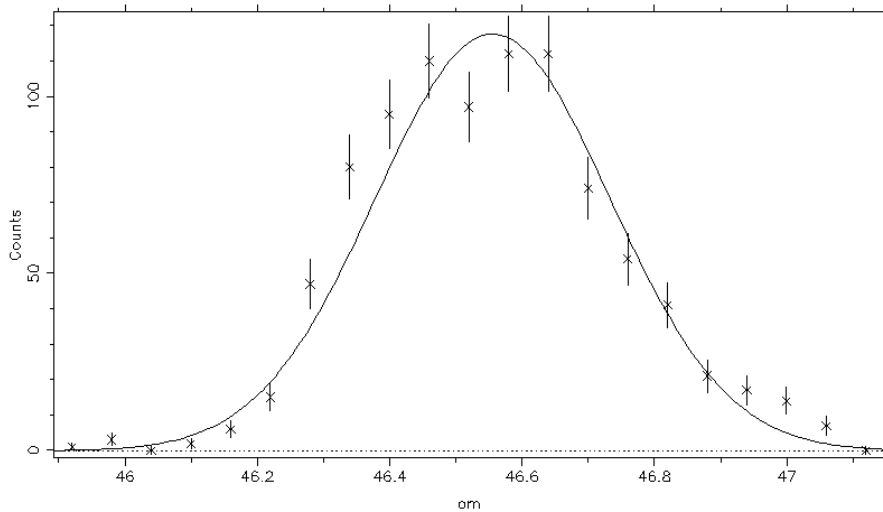
Slits: 20x10mm<sup>2</sup> incoming, 50x50mm<sup>2</sup> before detector

$\lambda = 3.3 \text{ \AA}$ ; Time per point  $\sim 0.53 \text{ sec}$ ; Monitor pre-set 10000; SING current 1.292mA

$\rightarrow \sim 80 \text{ counts/mA/sec}$  ; FWHM  $\sim 0.4^\circ$

Position	Max.Intensity	Int.Intensity	fwhm (Gaussian)	fwhm (Lorentzian)
$46.556 \pm 0.010$	117.79	$52.3 \pm 3.1$	$0.417 \pm 0.021$	0
Int.Intens.Exp.	Bg(Pos)	dBg/dx		
$54.6 \pm 1.8$	$-0.1797 \pm 0.9916$	0		

Monitor 10000  
 \*\*\* X 2.534  
 P: print, I: insert peak      t, X: full size, Z: zoom in, O: zoom out, Q: quit      orion:2020:391



$\lambda = 1.73\text{\AA}$ ; Time per point  $\sim 5.5\text{sec}$ ; Monitor pre-set 10000; SINQ current 1.292mA  
→  $\sim 15\text{ counts/mA/sec}$  ; FWHM  $\sim 0.2^\circ$

Position	22.8021 $\pm$ 0.0032	Max.Intensity	555.6	Int.Intensity	103.0 $\pm$ 4.4	fwhm (Gaussian)	0.1741 $\pm$ 0.0048	fwhm (Lorentzian)	0
Int.Intens.Exp.	106.8 $\pm$ 2.6	Bg(Pos)	1.794 $\pm$ 0.770	dBg/dx	0				
Monitor	10000								
*** $\chi^2$	3.718								

