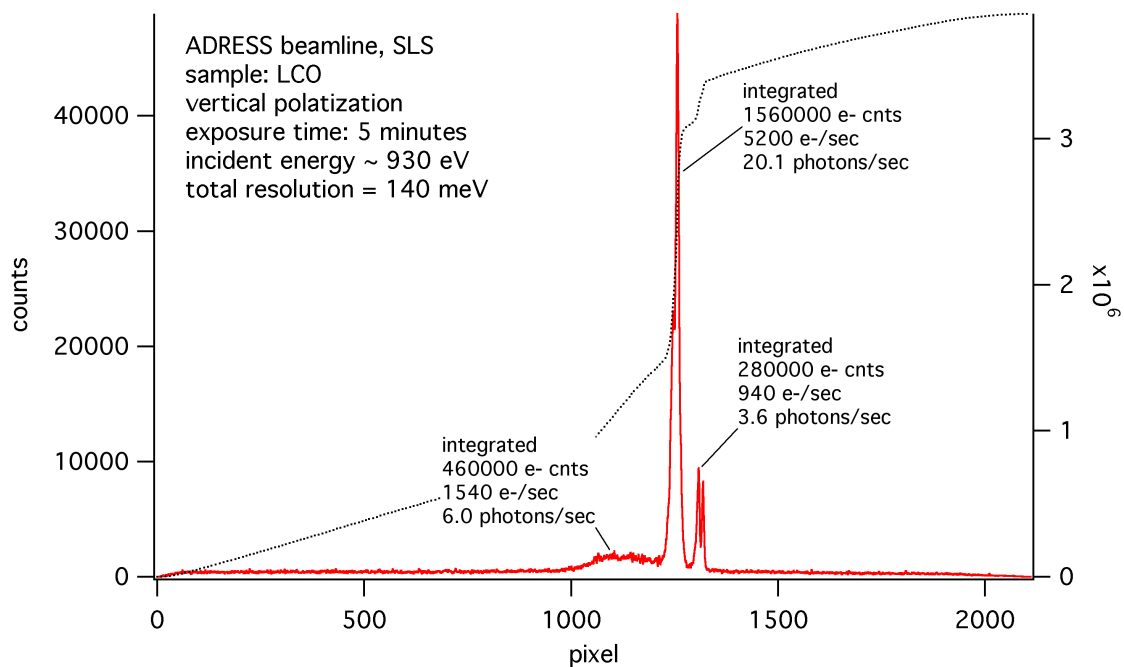


## RIXS count rates - Experimental Data, ADRESS, SLS



BL flux at RP 10,000 (calc)  
 $6 \times 10^{12}$  ph/sec  
spectrometer  
H acc = 5.1 mrad  
V acc = 4 mrad  
grating effic ~ 0.05  
det angle = 20 deg  
det effic unknown  
(values at 1000 eV)

This is the data summed horizontally across the detector  
for most intense d-d excitation-yields and average of 0.0002 photons/pixel/sec!

## Comparison to SIX

BL flux at RP 14,000 (calc)  
9x10<sup>12</sup> ph/sec  
spectrometer (per branch)  
H acc = 16 mrad  
V acc = 2-3 mrad  
grating effic ~ 0.07  
det angle t.b.d.  
det effic t.b.d.  
(values at 1000 eV)

Spectrometer throughput is expected to be at least 2.3 times ADRESS per branch due to increased acceptance (H mainly). Design is still in progress...

But assuming detector at similar angle, will yield at least 2 the count rate per unit area on detector.

## more fundamental considerations - cross section for inelastic scattering

under some bold assumptions - mainly, the inelastic scattering is completely isotropic

if we assume a det efficiency of 50% for SLS, they collect an integrated  $20.1 \text{ ph/sec} \cdot (1/.5) \cdot (1/0.07)$

= 574 photons in  $20 \text{ mrad}^2 = 30 \text{ photons / mrad}^2$  for an intense d-d feature

from here, that corresponds to  $4 \times 10^8$  d-d photons scattered into all  $4\pi$  solid angle. At a incident photon rate of  $6 \times 10^{12} \text{ photons/sec}$ , that gives a cross section for scattering into all angles of  $7 \times 10^{-5}$  inelastically scattered photons / incident photon for an intense feature.