

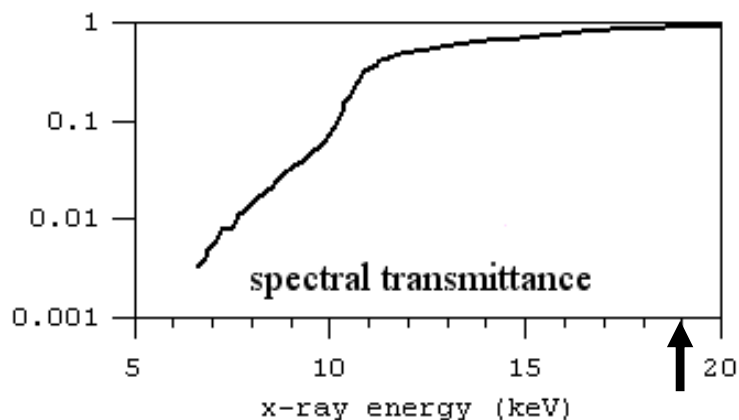
# Response of diamond particle detector using x-ray injection @ NSLS-X15A (19 keV)

## NSLS parameters

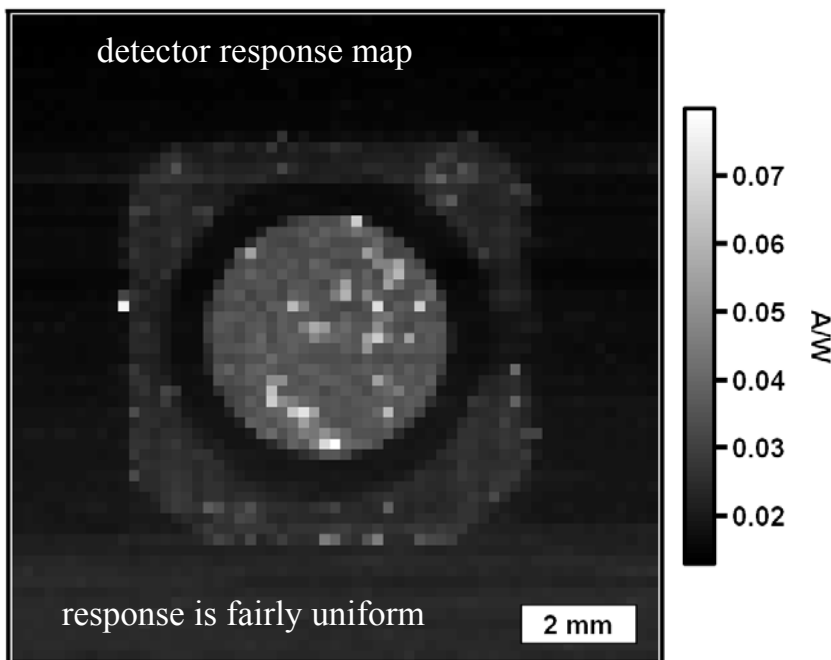
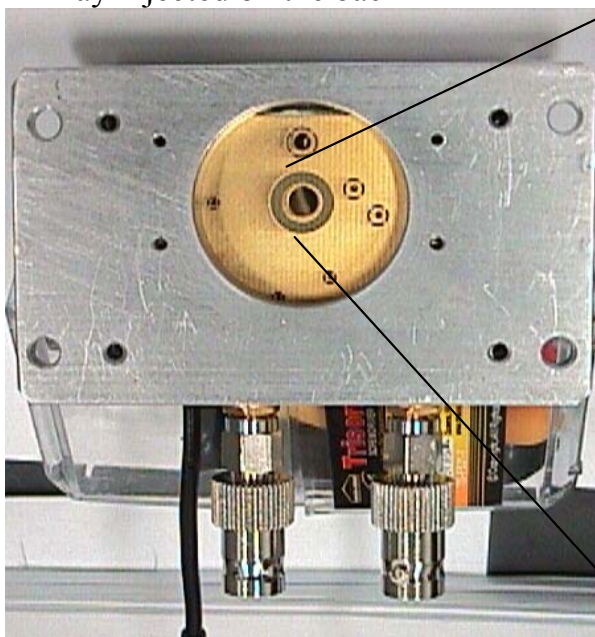
Bunch frequency: 52.88 MHz  
Bunch spacing: ~19 ns  
Bunch length: 287 ps  
x-ray beam size: 0.2 x 0.2 mm<sup>2</sup>

## Measured results

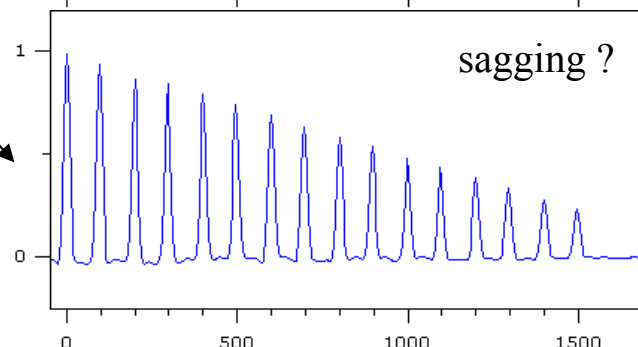
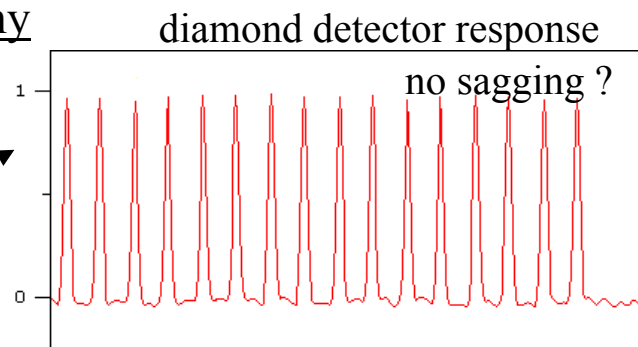
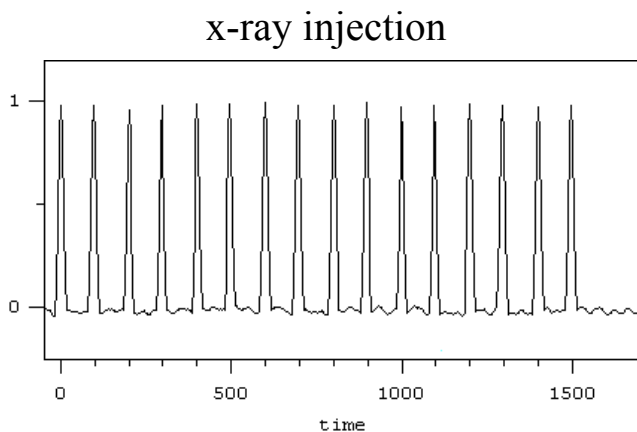
Transmittance of Au pad: 0.92  
Absorption of diamond: 0.0672  
Typical photocurrent (ave): ~nA  
Diamond responsivity: 0.00464 A/W



x-ray injected on the back



To be examined on other (more intense) x-ray beamlines  
the sagging effect of diamond detector, if any



# Temporal response of diamond particle detector using x-ray injection @ NSLS-X28C (5-20 keV, 'pink beam')

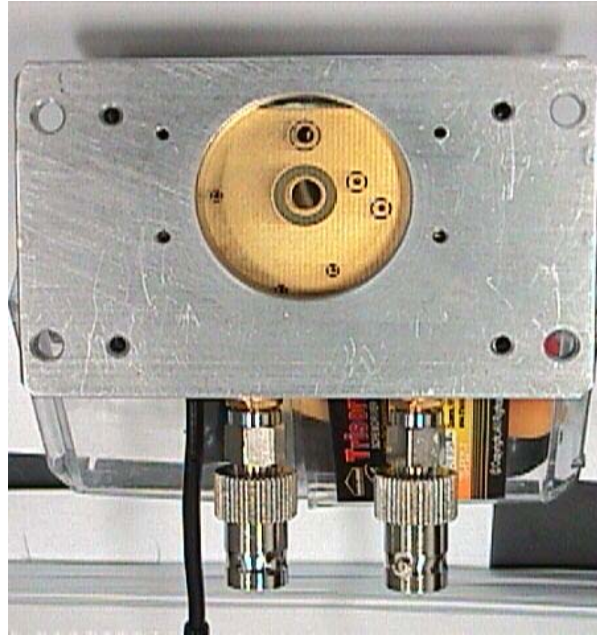
T. Tsang  
BNL  
Feb. 9, 2010

## NSLS X28C beam parameters

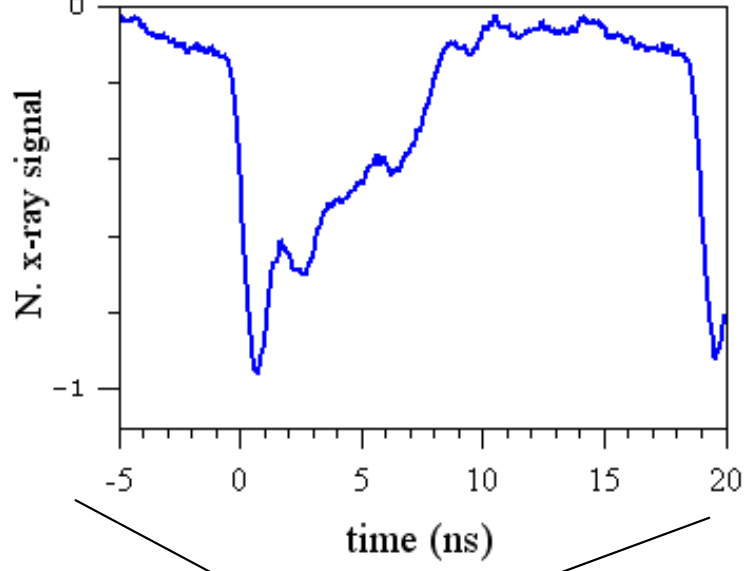
Bunch frequency: 52.88 MHz  
 Bunch spacing: ~19 ns  
 Bunch length: 287 ps  
 Full beam power: ~10 Watts

## Results

Apertured x-ray beam size:  $\phi = 1.6$  mm  
 Max. ave x-ray beam power: ~4 Watts  
 HV power supply: -500 volt/20 mA  
 Diamond responsivity: 0.00464 A/W  
 Max. photocurrent (ave): 20 mA  
 Typical photocurrent (ave): ~nA to mA



## diamond particle detector (IV) response to single x-ray bunch on a 3 GHz scope



manual trigger

