

# Wish list: detectors for diffuse scattering and stroboscopy

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(presented by D.L. Nagy)

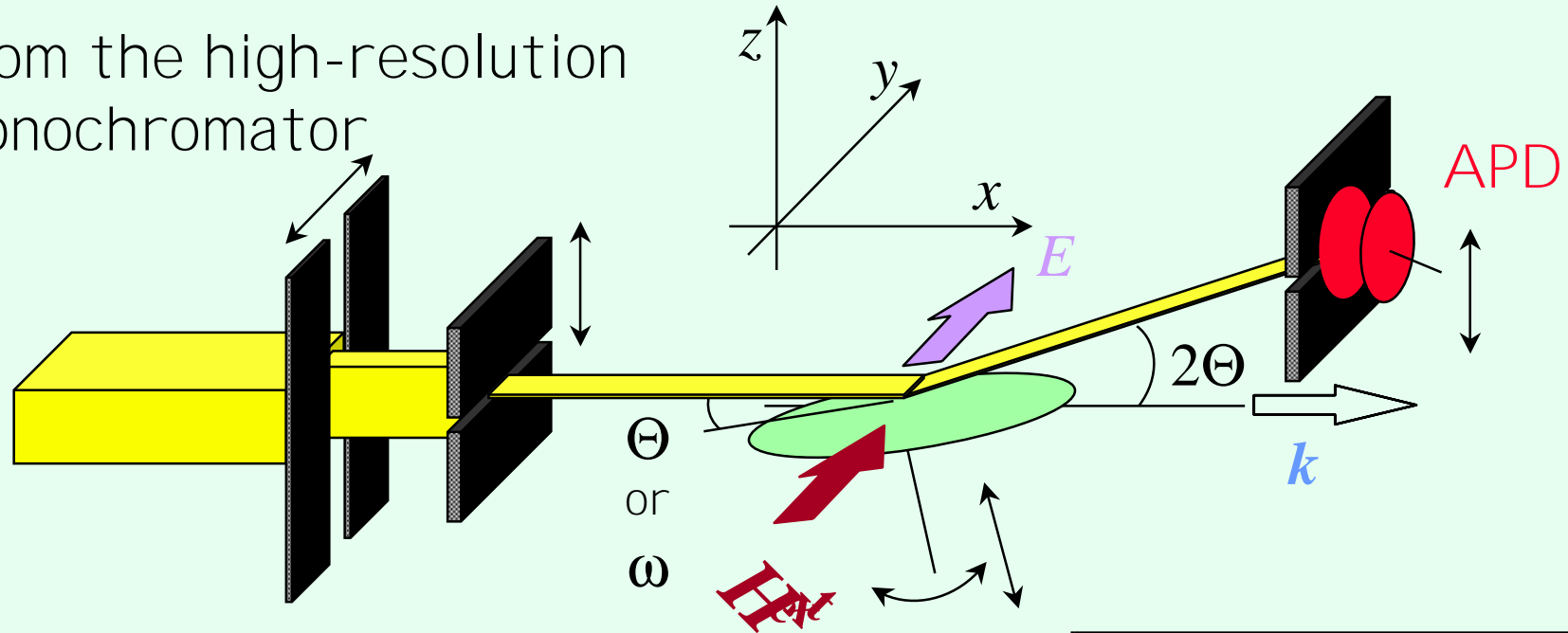
KFKI Research Institute for  
Particle and Nuclear Physics,  
Budapest, Hungary



APD Detector Workshop  
ESRF Grenoble, 3 September 2005

# Arrangement of a GI NRS/SMR experiment

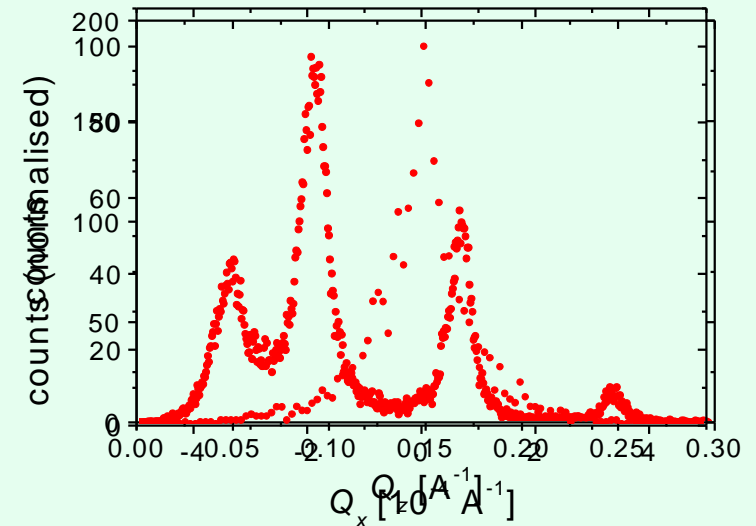
from the high-resolution  
monochromator



$$\Delta Q_x = 2k \Theta \Delta \omega$$

$$\Theta/2\Theta \text{ as can } Q_x - Q_z \text{ as can}$$

$$\xi = \frac{d}{\lambda} = \frac{1}{\Delta Q_x} = \frac{2\pi}{Q_x}$$



# Modular Multi-Element Detector for Nuclear Resonance Diffuse Scattering

- Primary people involved: RMKI Budapest, HASYLAB/Rostock?
- Target Application: Reflectometry (Grazing Incidence NRS) - near 14 keV

# Modular Multi-Element Detector for Nuclear Resonance Diffuse Scattering

- Main characteristics:

Time resolution:  $< 5$  ns

6

Effective thickness:  $\sim 0.5$  mm

Acceptance:  $< 1 \times ?$  mm

Channels:  $> 5$  (odd)

# Modular Multi-Element Detector for Nuclear Resonance Diffuse Scattering

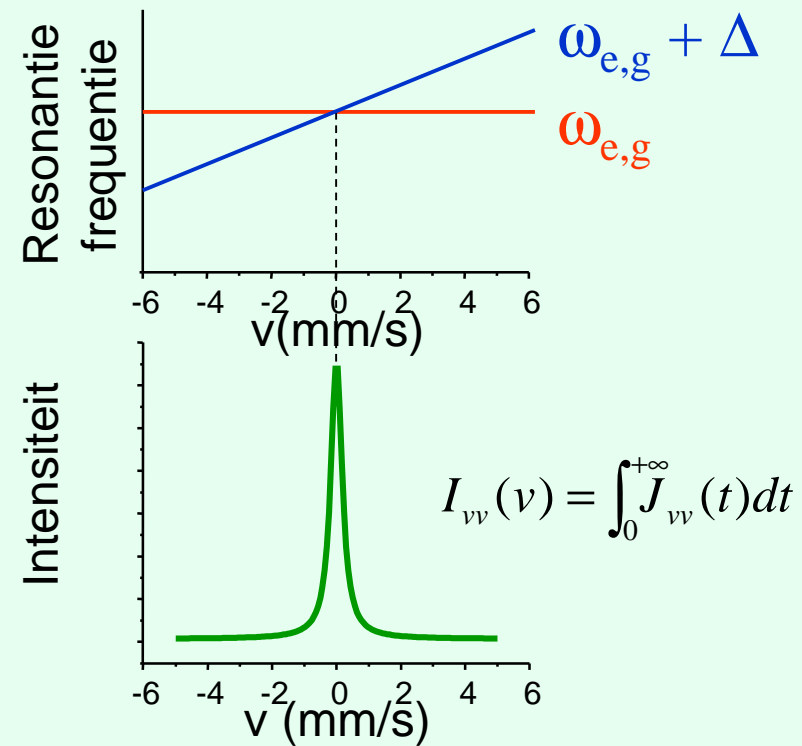
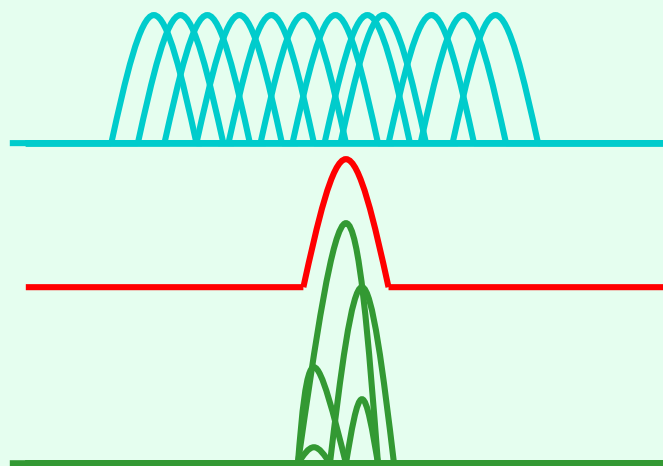
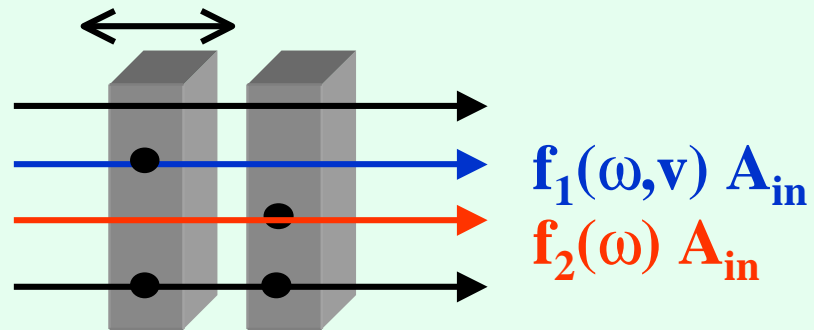
- Others:

To be based on commercial device as much as possible

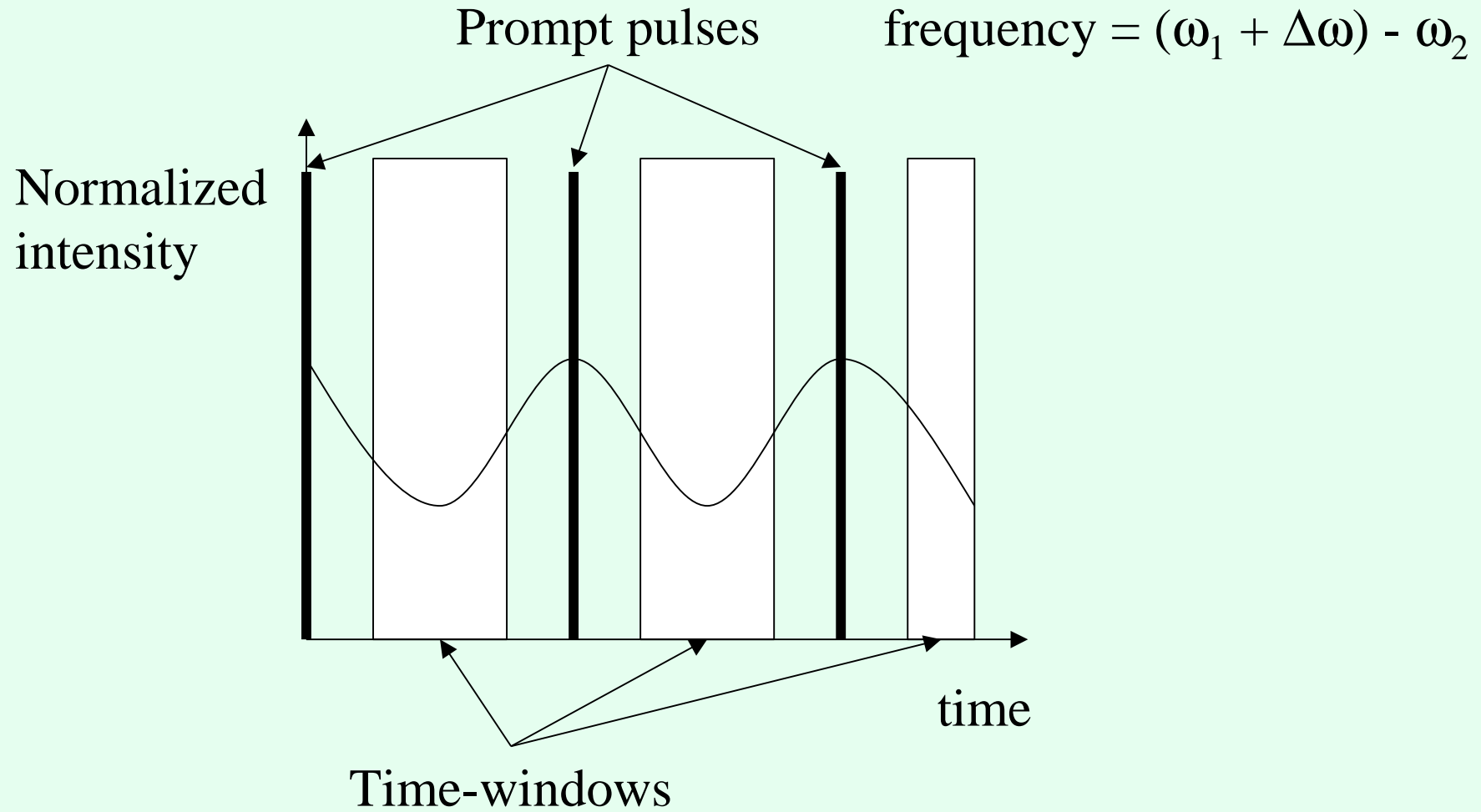
Modular, replaceable when broken

- Status: request, no people working on it in RMKI

# Nuclear forward scattered radiation



# Stroboscopic detection



# Fast APD Detector for Stroboscopic Detection of NRS

- Primary people involved: IKS Leuven, RMKI Budapest, Grad. School OSAKA Univ.,? Spring-8
- Target Application: NFS and Reflectometry, SMR (Grazing Incidence NRS) near 14 keV



# Fast APD Detector for Stroboscopic Detection of NRS

- Main characteristics:

Time resolution:  $< 0.5$  ns

Prompt pulse rate:  $> 10^6$

Effective thickness:  $\sim 0.5$  mm

Acceptance:  $< 1 \times ?$  mm

Channels:  $> 5$  (odd)

# Fast APD Detector for Stroboscopic Detection of NRS

- Others:

To be based on commercial device as much as possible

Modular, replaceable when broken

- Status: request, no people working on it in RMKI