

APD Detector Workshop

Meeting of the Scientific Side
Developers & Users

Originated (partially)
in 3-way meeting

But not so limited.
(DESY, KEK,...)

APD Detector Workshop
Saturday, 3rd September 2005
Auditorium, ESRF, Grenoble, France

chair: Alexandr I. Chumakov

09:00 Welcome Rudolf Rüffer
09:05 Introduction Alfred Baron

APD needs of various communities

09:15 Si-APD Detectors for Nuclear Excitation Experiments... Shunji Kishimoto
10:00 Speckle spectroscopy Olaf Leupold
10:45 Coffee break
11:00 Fast Time Resolved Diffraction Michael Wulff
11:45 Nuclear Resonance Esen Ercan Alp
12:05 Diamonds and Fast Electronics John Morse
12:15 APDs as Fast ESRF Counters Jean-Marie Rigal
12:30 Lunch in the ESRF canteen ("Salle d'hôte")

chair: Alfred Baron

14:00 Projects in Progress
Status reports from project leaders based on summary pages
(T. Agne, A. Baron, T. Deschaux, P. Fernandez, H.C. Will)

15:00 Proposals for Detectors and Electronics
Wish list reports from proposers based on summary pa
(O. Leupold, D.L. Nagy, U. van Bürck)

16:00 Coffee break

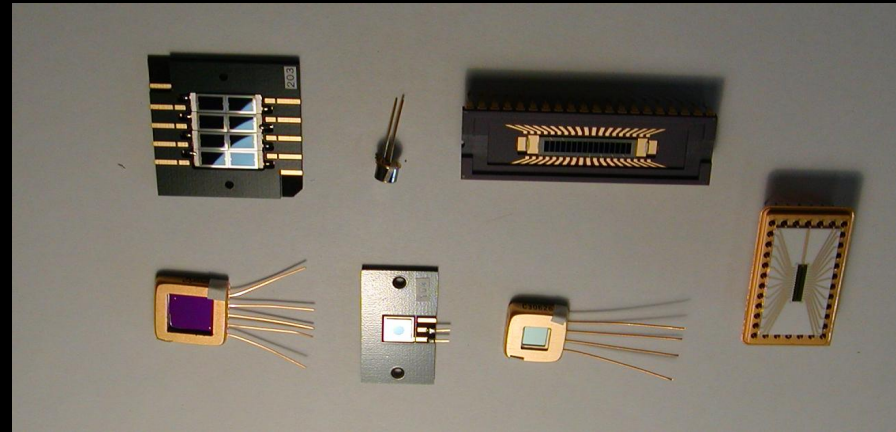
chair: Heinz Graafsma

16:30 General Discussion and "Where to go"
19:00 Dinner (Departure at 18:30 in front of the ESRF Guesthouse)

OLD

APDs

Diodes w/Gain



Fast: \emptyset ns pulses (1 to 10 ns wide)
 \emptyset ns time resolution (0.1 to 1 ns)

Silicon:
o Processing is pretty advanced (but HV)
o Stopping power is not so good ($E > 10$ keV)

Mostly photon counting

Scientific Applications

Scattering:

NIS: Big & Thick

NIS (fast decay): Fast & Big & Thick

NFS: Fast & Fast Recovery & Thick

NFS (High Energy): & Thicker

SRPAC: Big Array & Thick

SAXS: 1D->2D Array

...

Speckle & Other Time-Resolved Work
2D Arrays with many, smaller elements

(10^2 - 10^6)

(1mm^2 - 0.01mm^2)

Fast Photon Counter

What to think about...

What is possible now?

What is possible with "a bit" of R&D?

What is desirable?

What is economical?

What is simple (easy to understand & implement)?

What to dream about?

Status Now

Many "Small" efforts at Many labs

Big 3 & KEK & DESY & NSLS & ...

Device Efforts: Kishimoto/Hamamatsu, CERN/Hamamatsu
& Smaller (APS/PKI, Packaging/PKI)

Many discrete component amplifiers

>~ 1cm²/channel

Note Educational
Value

Downstream electronics is mostly 10 or 20 years old

Based on 3 to 5 ns pulse widths

APD Detector Workshop Goals

NOW: Share Information

Near: Simple Common Detectors

FUTURE

Mid: Common Components (ASICs & ?)

Further: Fancier Common Detectors

10^6 Channels ? & ?

Where to go from here?

(How to get to those goals - or other goals)

Information Management:

Mailing Lists?

Web Site (depository)?

Meetings/discussions?

Project (Money) Management:

Joint Projects ?

Division of Work ?

Funding ?