

Welcome to PD24

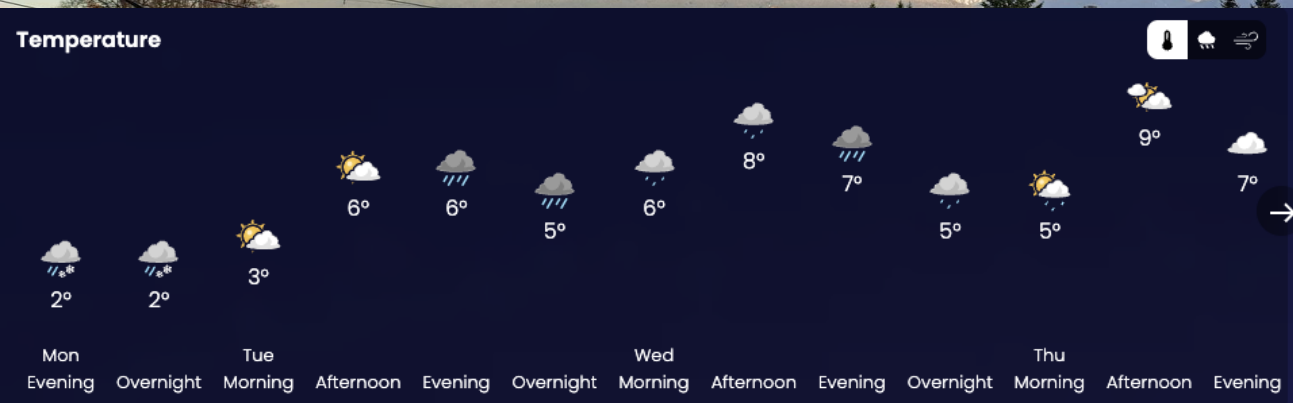
Fabrice Retiere (TRIUMF)

Giacomo and Maria Adriana did most of the work

- F. Retiere (TRIUMF, Chair)
- G. Gallina (TRIUMF, Princeton Univ., Co-Chair)
- D. Grant (SFU)
- H. Lewis (TRIUMF)
- K. Raymond (TRIUMF)
- M. A. Sabia (TRIUMF, Sapienza)
- F. Shi (TRIUMF)
- R. Underwood (TRIUMF)
- P. Agnes (GSSI)
- P. Organtini (Princeton Univ.)
- A. Jamil (Princeton Univ.)

November is the worth month in Vancouver

- I am happy because the temperature will stay below 8C
 - Snowing on the mountains! Whistler opening on Thursday
- But be mindful of the rain and opportunistic when it doesn't
- Enjoy listening to many excellent talks



Thank you all for being back after 6 years!

- University of Tokyo in November 2018



- We were orphan despite
 - The bari SiPM workshop in October 2019
 - NDIP in July 2022 in France
 - NDIP is coming back in 2025, always in France

Continuing the PD workshop

- Competing and related events
 - International SPAD sensor workshop in June in Trento, Italy
 - Single Photon Workshop happening this week in Edinburgh, Scotland
 - CPAD happening this week at Oak Ridge, Tennessee, USA
- The community is growing outside “subatomic physics”
- Consolidation of the R&D effort in Subatomic physics
 - CERN DRD4 for photon detector and Particle Identification
 - CPAD effort in photon detector
- How to stay relevant?
 - Could we consider aligning the PD workshop date with a DRD4 collaboration meeting?

Continuing the PD workshop

- Revisiting the International Advisory Committee
 - Current member, lets meet for lunch on Wednesday
- Planning the next workshop in 2026
 - Seeking expression of interest
 - Giacomo and myself will collect requests for now
 - We already have expression of interest! So, it will happen
 - Our aim to finalize a choice very soon...

Now – a few provocative notes

Are PMT becoming obsolete?

- Will JUNO be the next SNO?
- Is there any way to detect light over large area without a huge price tag?
 - Critical for neutrino physics and astronomy

Who will win the competition for fastest timing?

SiPM
(digital)

MCP

Will digital SiPMs become wide-spread by 2030?

- “No, they are not versatile”
 - “I could not do anything with Philip’s digital photon counter”
- “No, they are too pricey”
 - Especially 3D integrated
- “No, digital SPADs are crap”
 - Most foundries over SPAD with large dark noise
- Yes, they offer best performances
- Yes, they offer lowest power dissipation
- My answer, yes coupled with design capabilities for tailoring them
- **Yours?**

Should we venture in applications outside subatomic physics?

- No
 - The competition is fierce
 - It is a distraction
 - We are not after making money

- Yes, because we have to



Lets start!

We need a few more junior chairs –
if you are a postdoc or student contact us

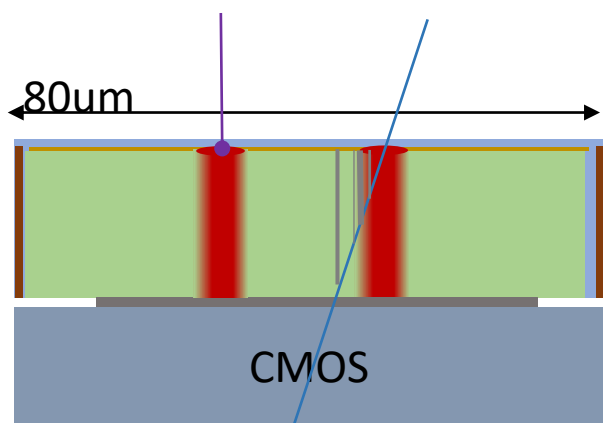


It does not always rain in Vancouver
Come back as a collaborator or member of our group

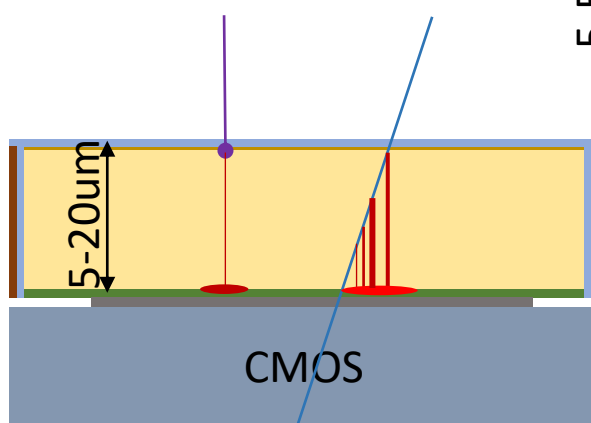
Back-side illuminated for everything

p+	p	p-epi	p-epi
n+	n	Poly	SiO ₂

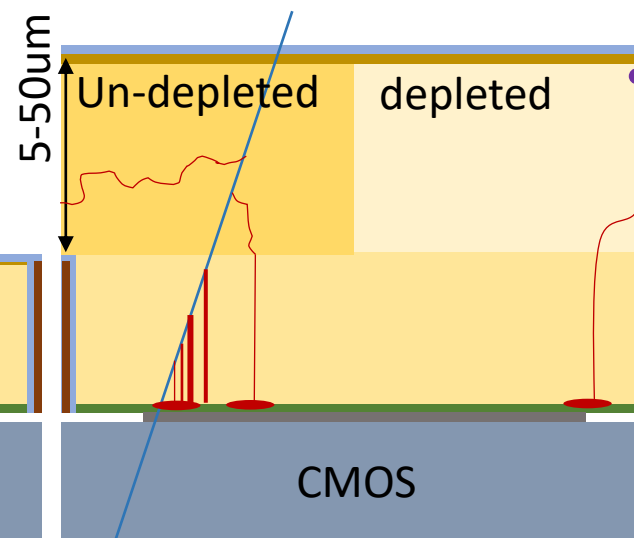
- | | Electron trajectories — Geiger mode avalanche
- | Hole trajectories — Linear avalanche
- VUV – Blue photon ↓ Charged particle • Neutron or dark matter



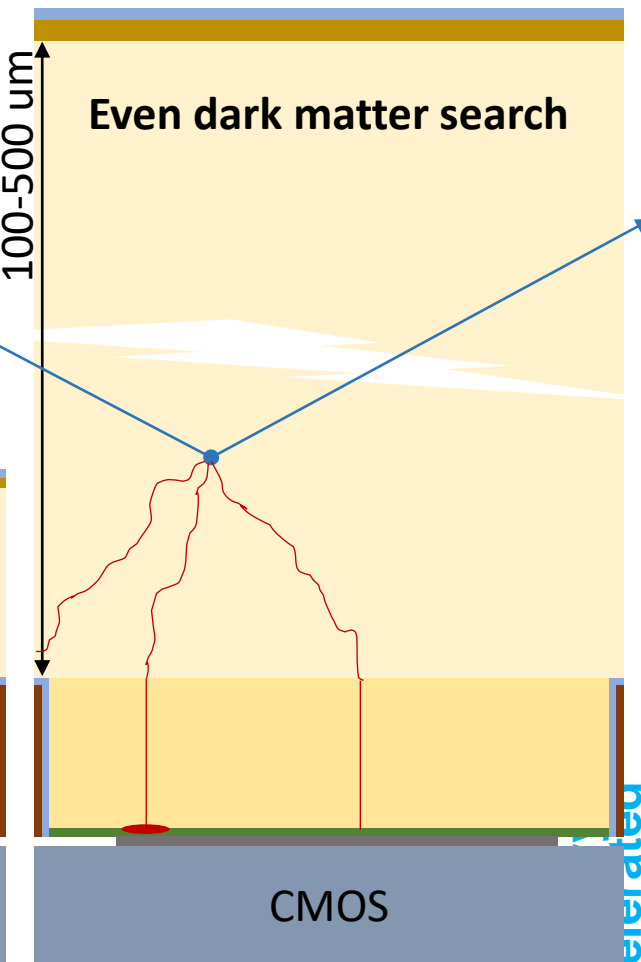
Front side avalanche diode



Back side avalanche diode

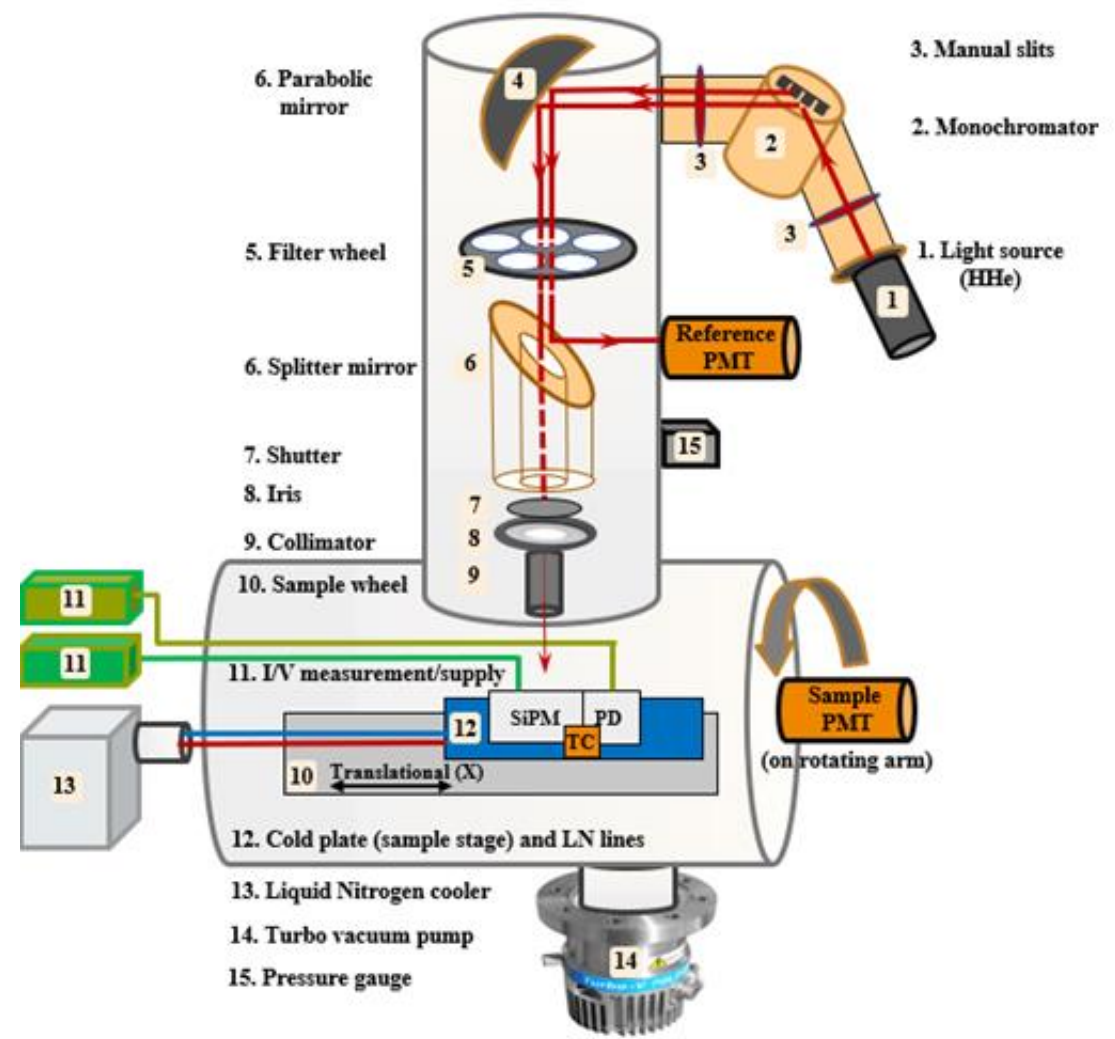


Extended

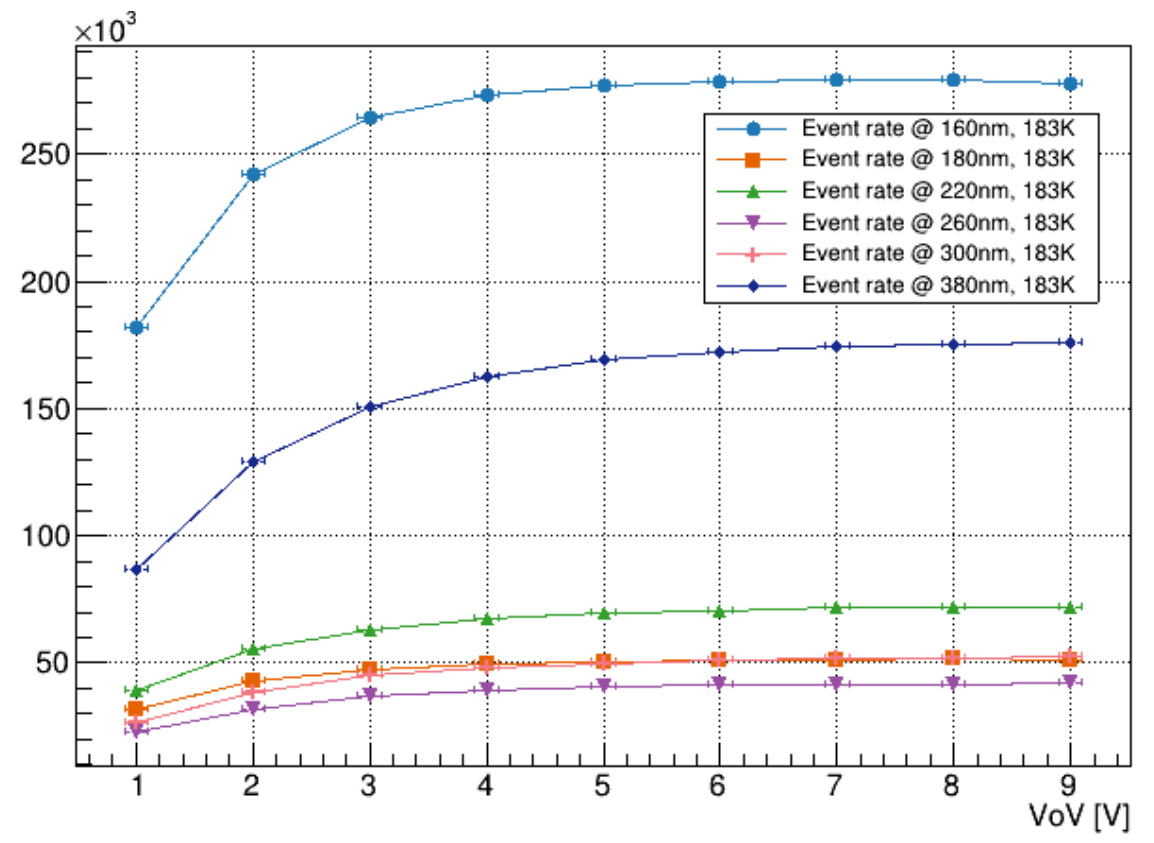


Ultra-thick

Asset: Vacuum Ultra-Violet Efficiency reflectivity and Absorption setup (VERA)



For example: inferring the number of electrons produced per VUV photon



Asset: MIEL

