

Compton Polarimetry Update from U Manitoba

48th B2GM

Savino Longo for the U. Manitoba Belle II / ChiralBelle Group

University of Manitoba

Savino.Longo@umanitoba.ca

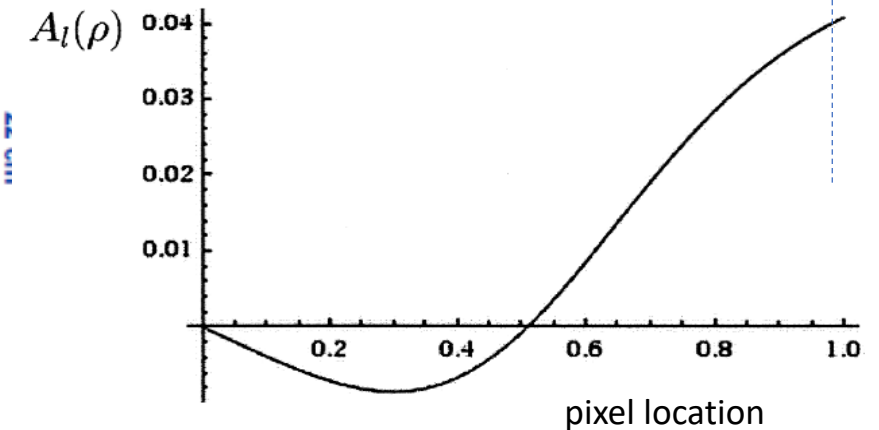
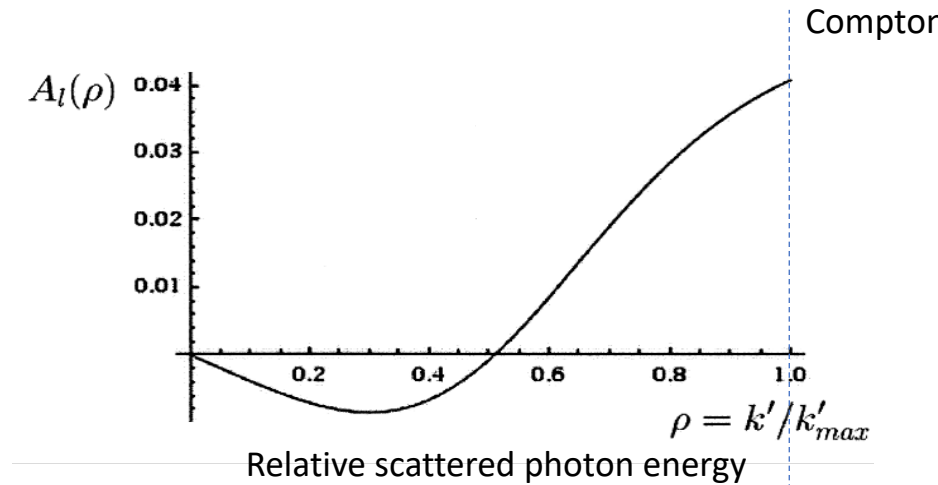
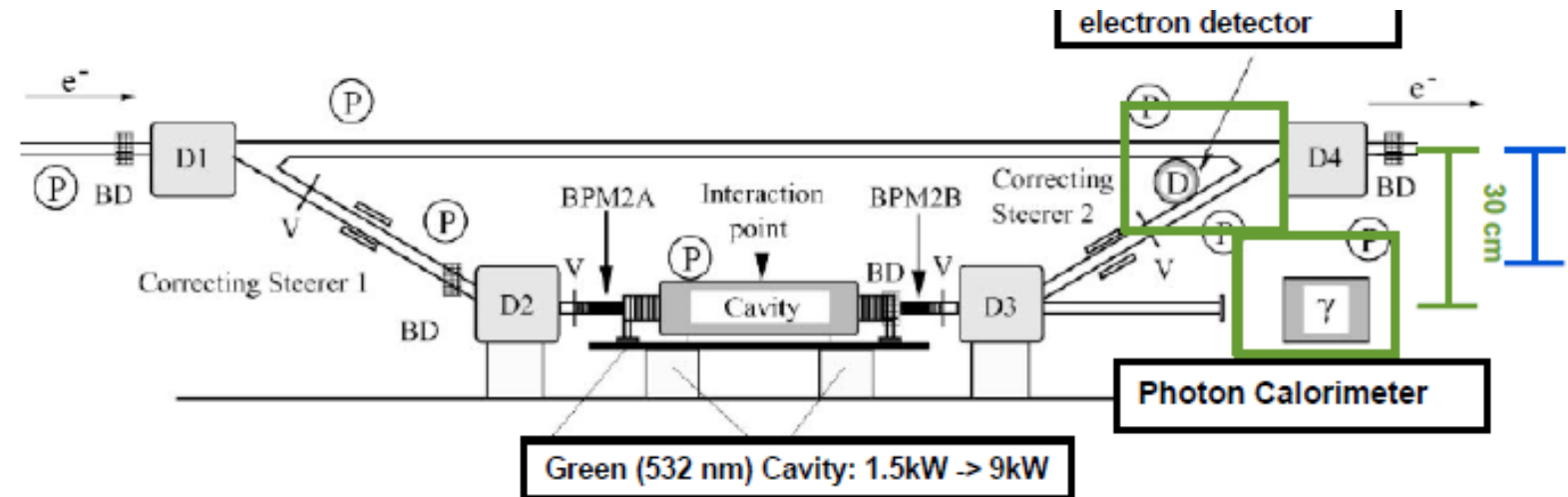


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Compton Electron Detector

- Focus over past months has been preparation of Compton Electron Detector for the MOLLER Experiment
- Detector uses HVMAPs pixel detectors
- Plan to apply similar detector technology at ChiralBelle

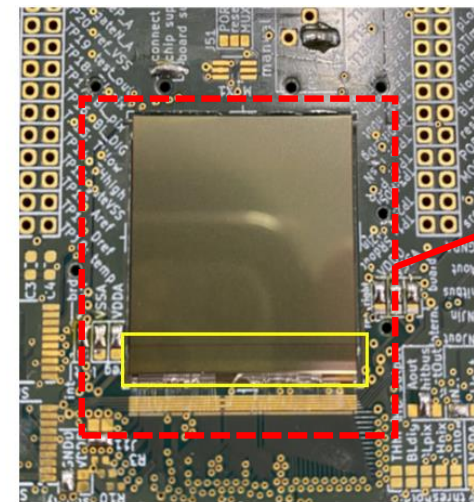
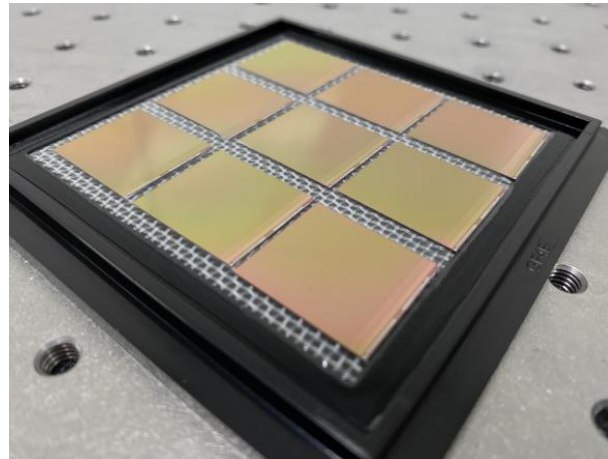
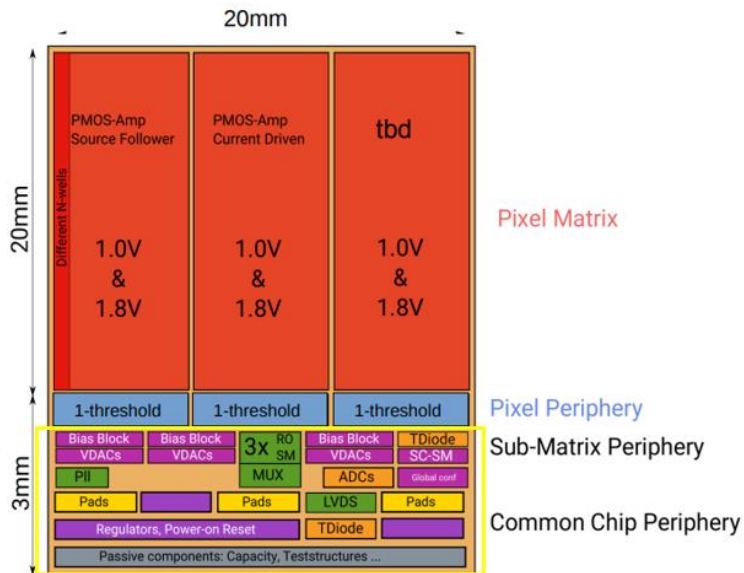
MOLLER Experiment Compton chicane



HVMAPS

N. Niloy

- **Hybrid pixel sensors** based on **HV-CMOS technology**
- Each pixel dimension is **80 x 80 μm^2** , spread across a **250 x 256 grid**
- Approximately **2 x 2 cm^2** detectable area
- Can be as thin as **50 microns** (low material budget)
- Readout electronics, filters and **amplifiers all integrated into the chip**
- Timing resolution of **16 ns** with peak detection rate of **30 MHz** per readout line
- Generates **~1W** of heat during peak operation
- Has aluminium **bond pads** for wire-bonded connections

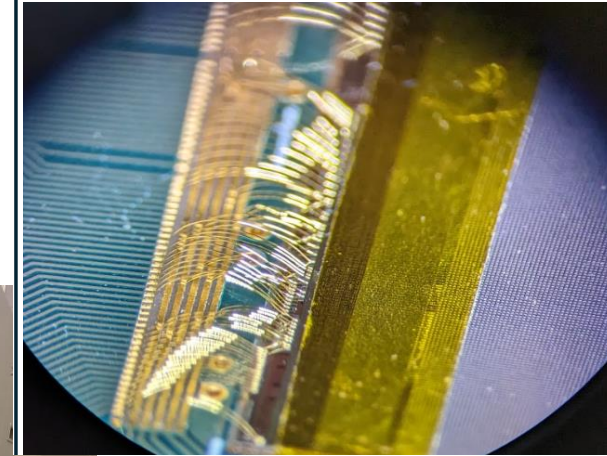
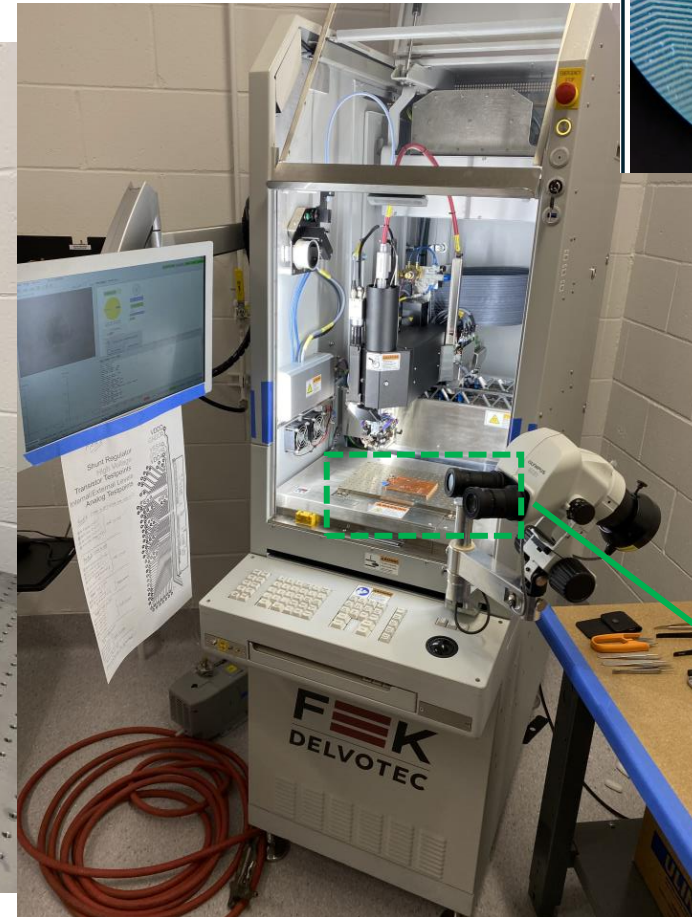
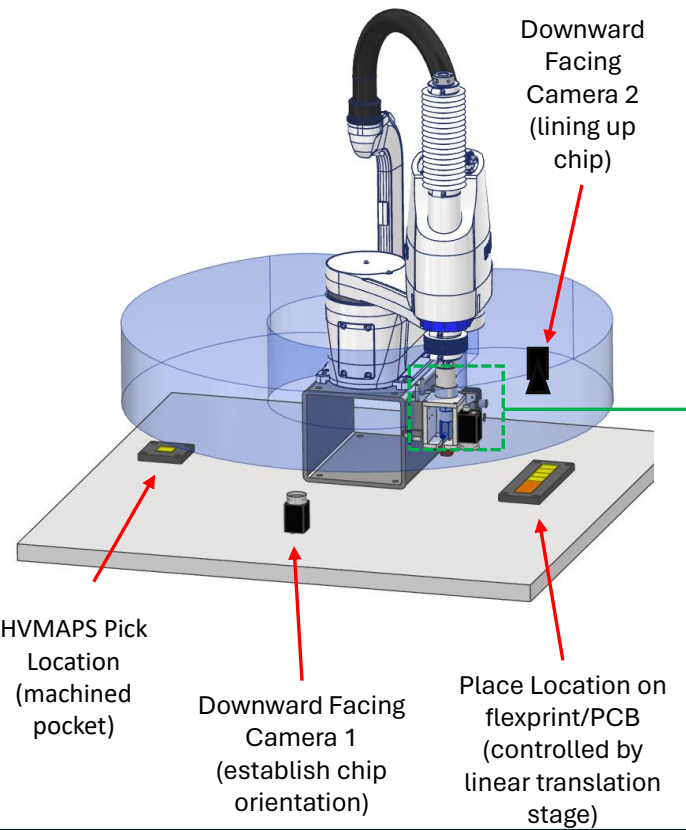


MuPix 10 with periphery section highlighted in yellow

HVMAPs Assembly at U. Manitoba

N. Niloy

- Infrastructure to automate detector construction is being prepared at U. Manitoba as MOLLER will need >2000 HVMAP detectors, note only 12 are for its Compton Electron Detector



ChiralBelle Integration Discussion

- Need to determine how to access Compton Electrons at ChiralBelle
- Likely will need Beryllium window(s) in beampipe
- Simulation code to study Compton e- transport at SuperKEKB?

Figures below from Photon Detector talk by A. Martens

