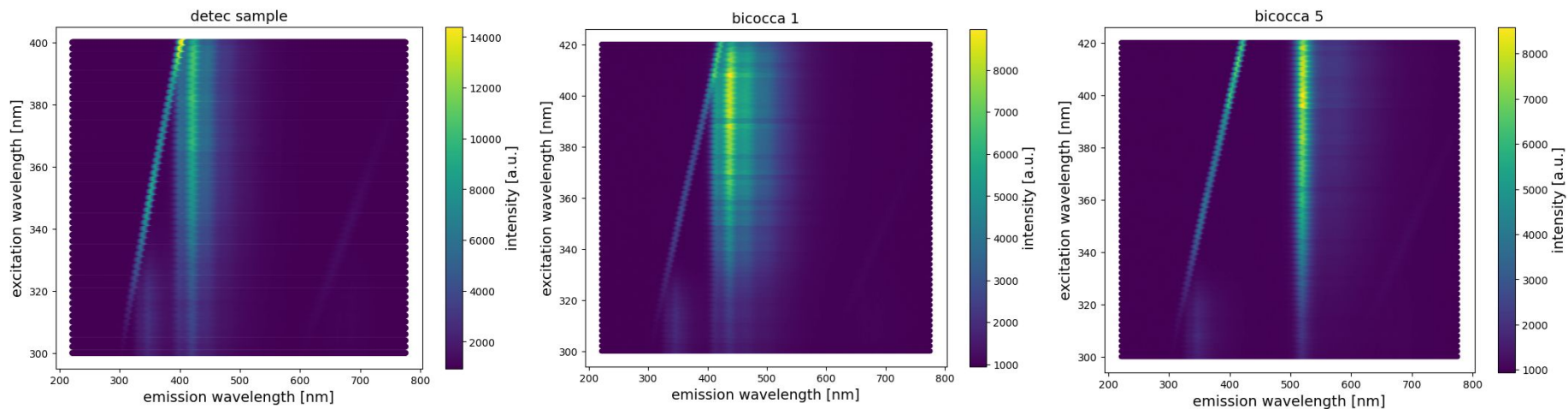


Bicocca 1 & 5 characterizations @ Napoli

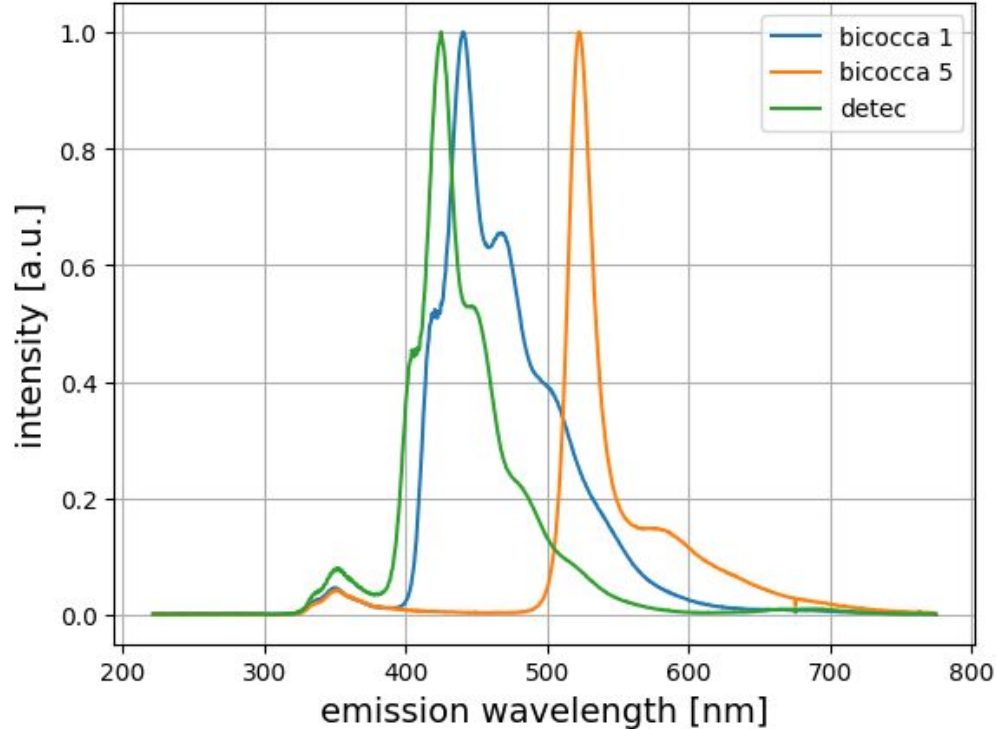


Marcello, Marco F., Marco M. and Guglielmo
12/03/2024

Emission/Excitation Spectra

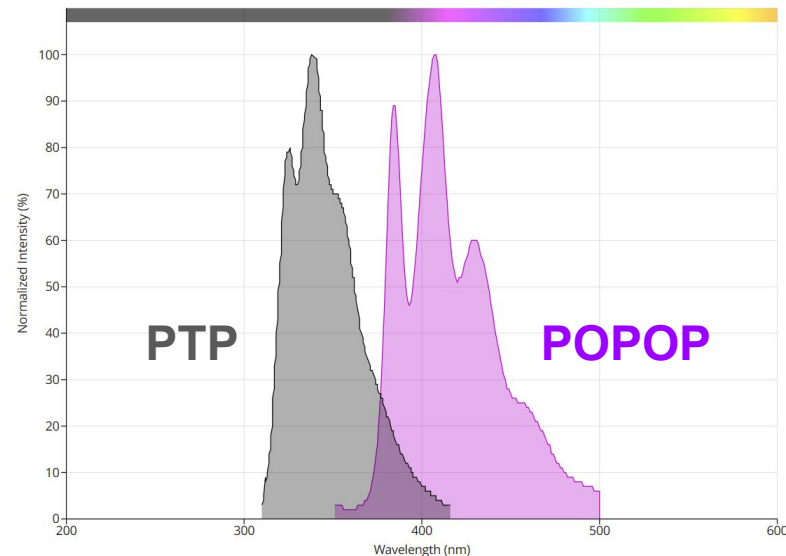
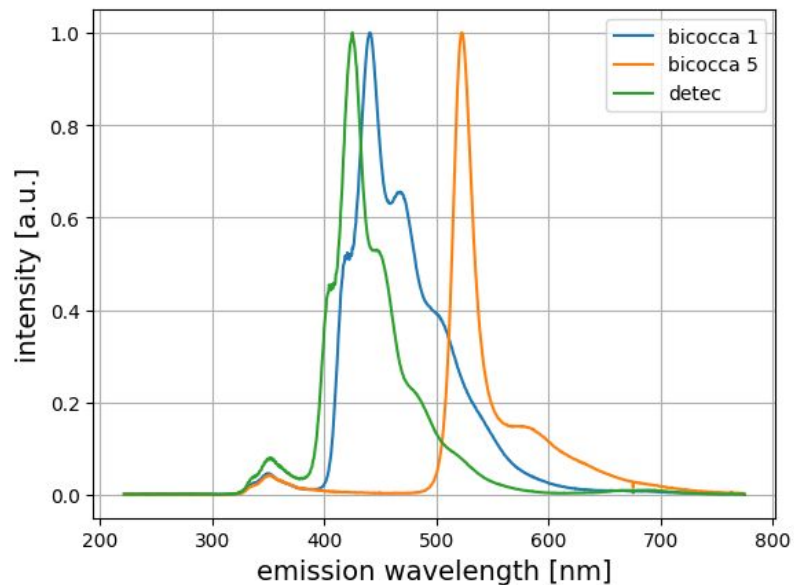


Emission/Excitation Spectra



- average emission for excitation wavelengths in the range [300, 420] nm
- emission-excitation correlated part removed

Emission/Excitation Spectra



<https://www.aatbio.com/fluorescence-excitation-emission-spectrum-graph-viewer/>

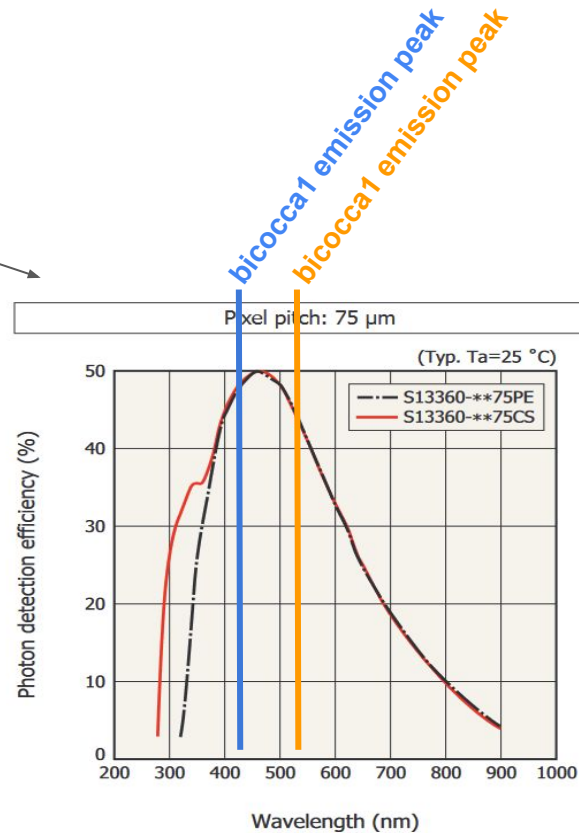
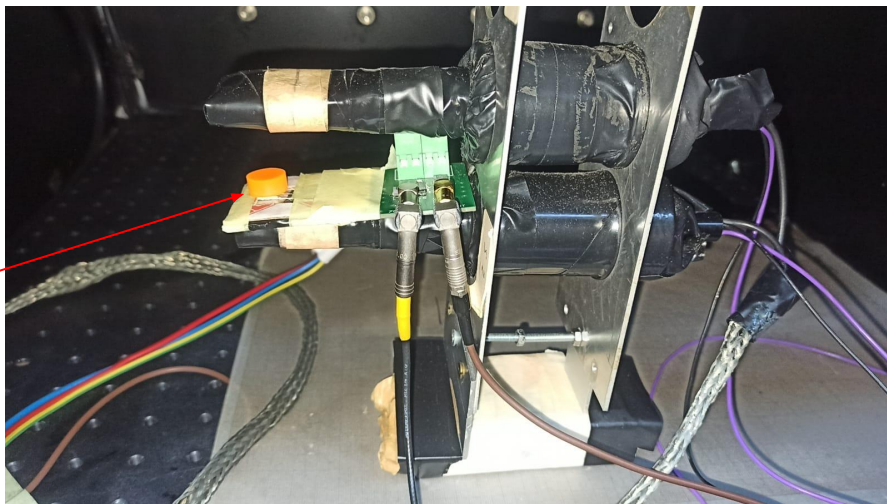
name	recipe	type	colour
Protvino_B	PVT/DVB (90/10 %wt) + 1.5%wt PTP + 0.04%wt POPOP	molecular	blue
Bicocca_1	PVT/DVB (90/10 %wt) + 1.5%wt PTP + 0.04%wt benzothiophene	molecular	blue
Bicocca_2	PVT/DVB (90/10 %wt) + 1.5%wt PTP + 0.04%wt coumarin-6	molecular	green
Bicocca_3	PVT/DVB (90/10 %wt) + 1.5%wt PTP + 0.04%wt benzothiophene + 0.04%wt coumarin-6	molecular	green
Bicocca_4	PVT/DVB (90/10 %wt) + 1.5%wt PTP + 1%wt Yb:CsPbBr ₃	NC	green
Bicocca_5	PVT/DVB (90/10 %wt) + 1.5%wt PTP + 1%wt Yb:CsPbBr ₃ /perylene dyad	NC	orange

Test bench for cosmics

- cosmics trigger (2 plastic scint. + PMT in AND)
- SiPM Hamamatsu 13360-6075
- TIA preamplifier
- Tektronix 500 MHz band, 6.25 Gs/s oscilloscope

sample

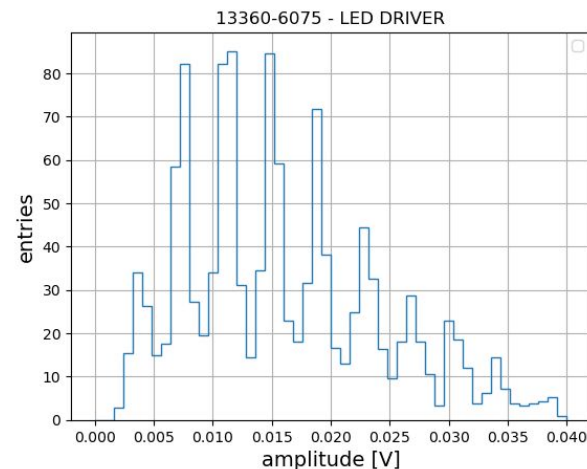
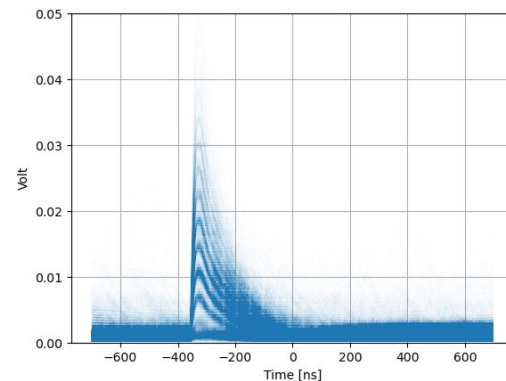
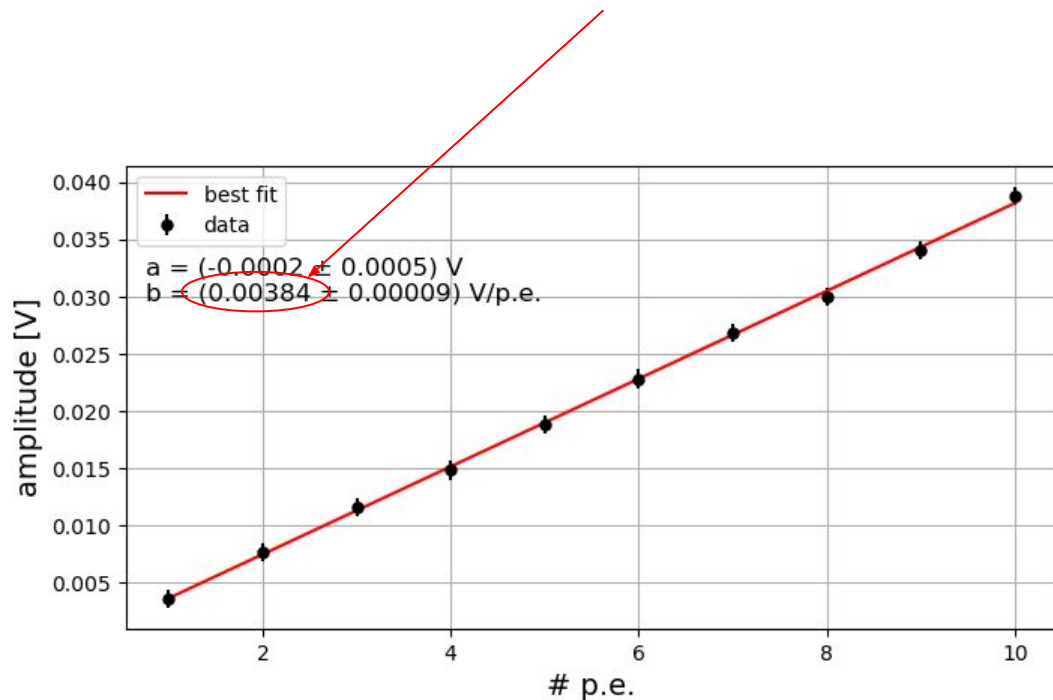
coupled to
SiPM with
EJ-550
grease



SiPM calibration

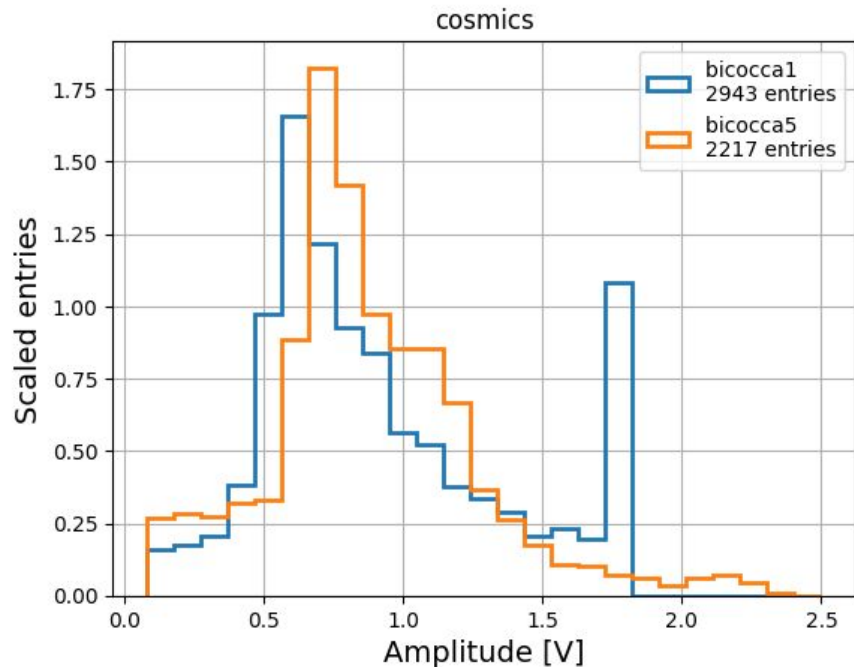
SiPM signals calibrated with a pulsed LED source

- waveform amplitude: 3.8 mV / p.e.



Results with cosmits

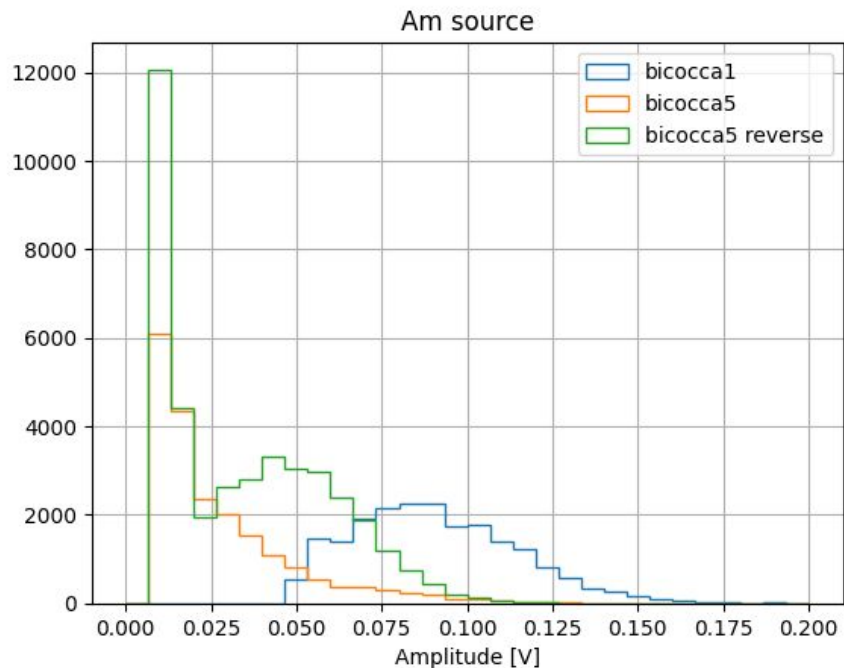
Few days of acquisition for sample.



- **Bicocca5** signal larger than **Bicocca1**.
 - if take into account pde (5% higher for b1 wrt b5) even more true.
- distribution moda ~ 150 - 200 p.e.

Results with alpha source

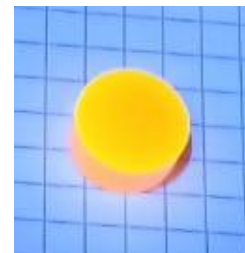
Short acquisition with Am241 source.



Bicocca1 signals are generally larger. Bicocca5 signals strongly depend on which face is coupled to the SiPM.



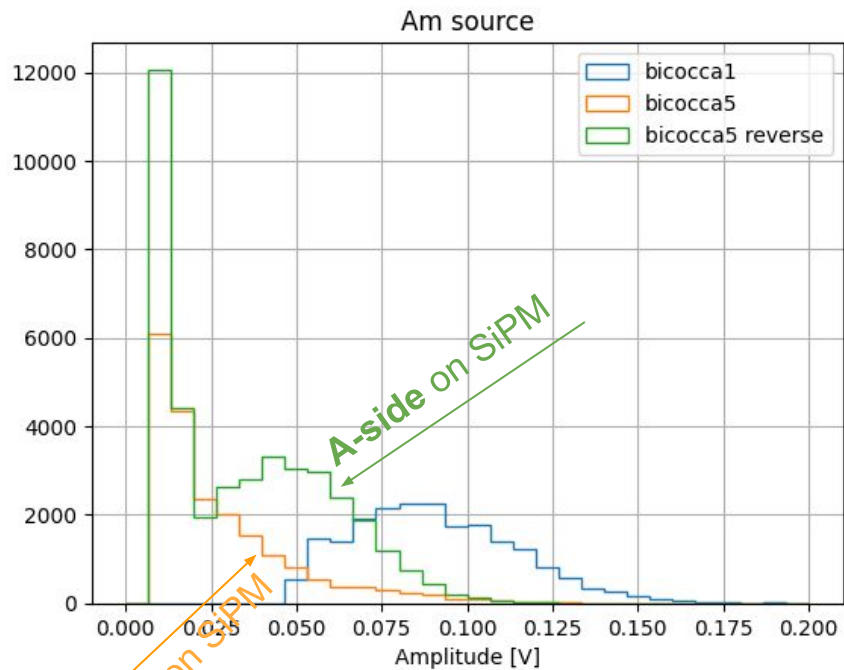
A-side



B-side

Results with alpha source

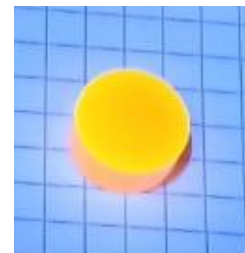
Short acquisition with Am241 source.



Bicocca1 signals are generally larger. Bicocca5 signals strongly depend on which face is coupled to the SiPM.



A-side

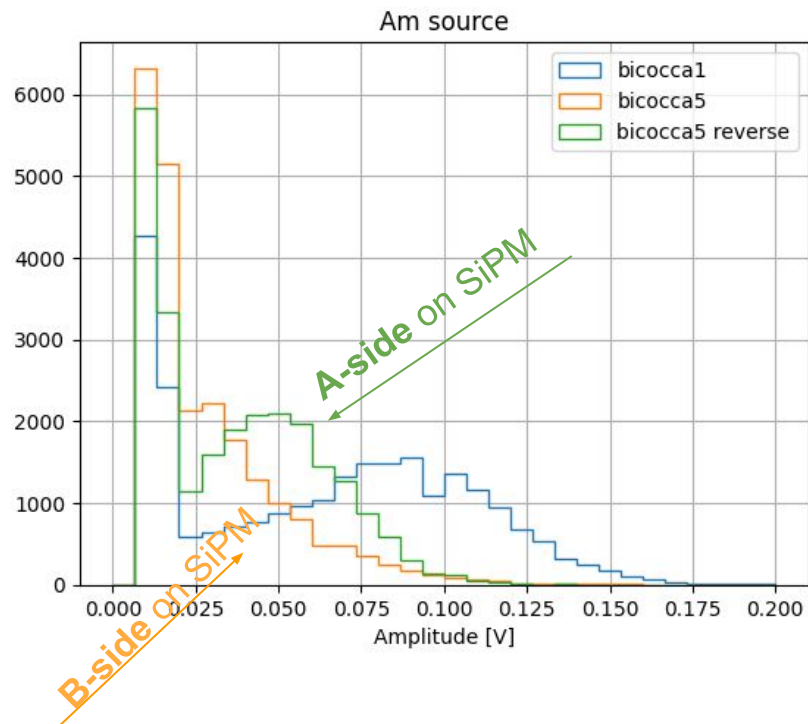


B-side

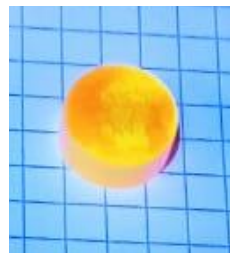
shows spots with different colors and optical densities

Results with alpha source

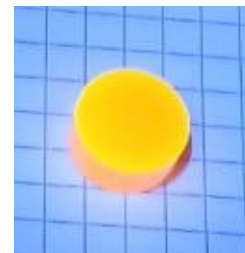
Short acquisition with Am241 source.



repeated acquisitions (different day, samples cleaned and re-coupled to SiPM) confirmed the scenario



A-side



B-side