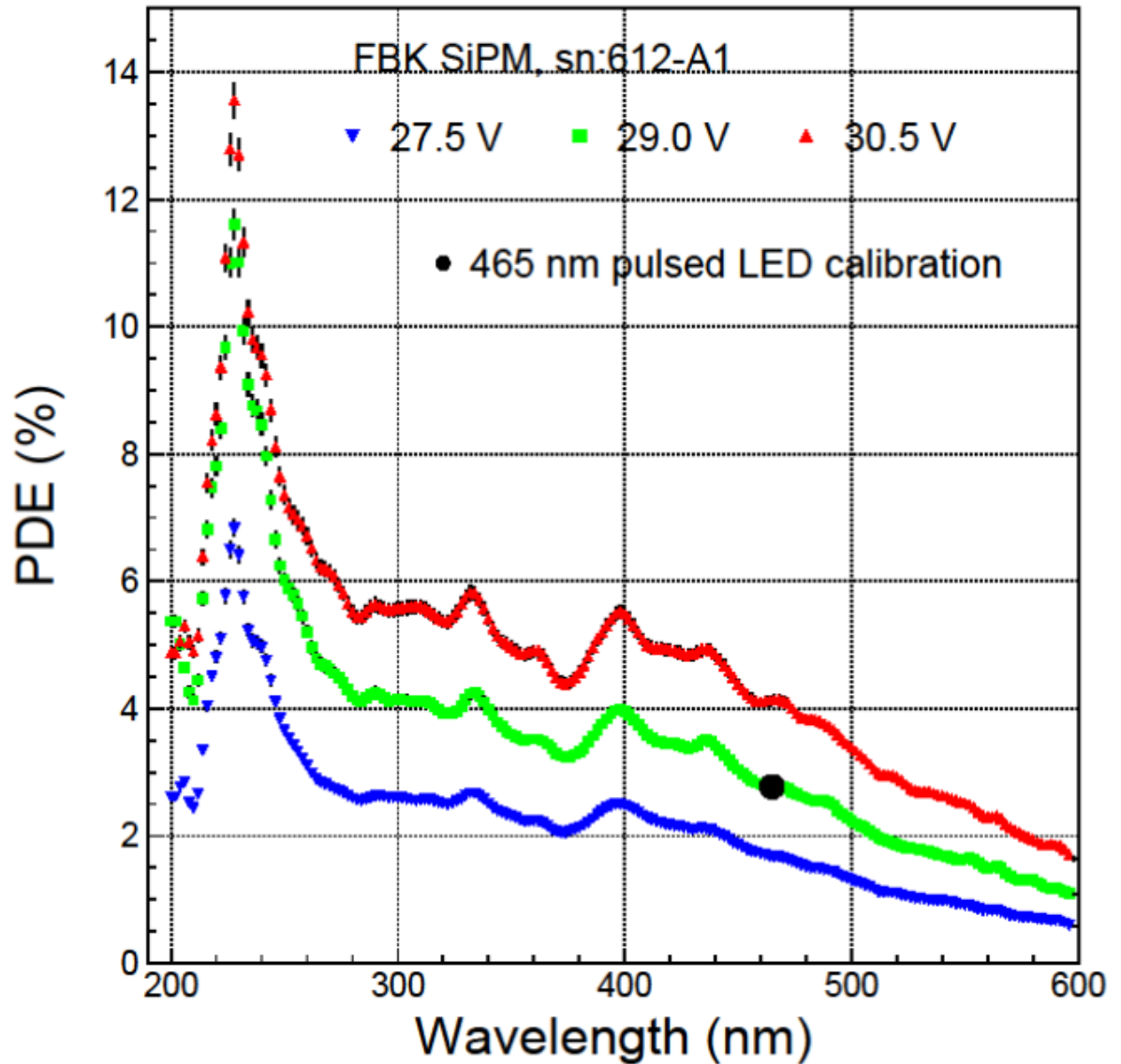


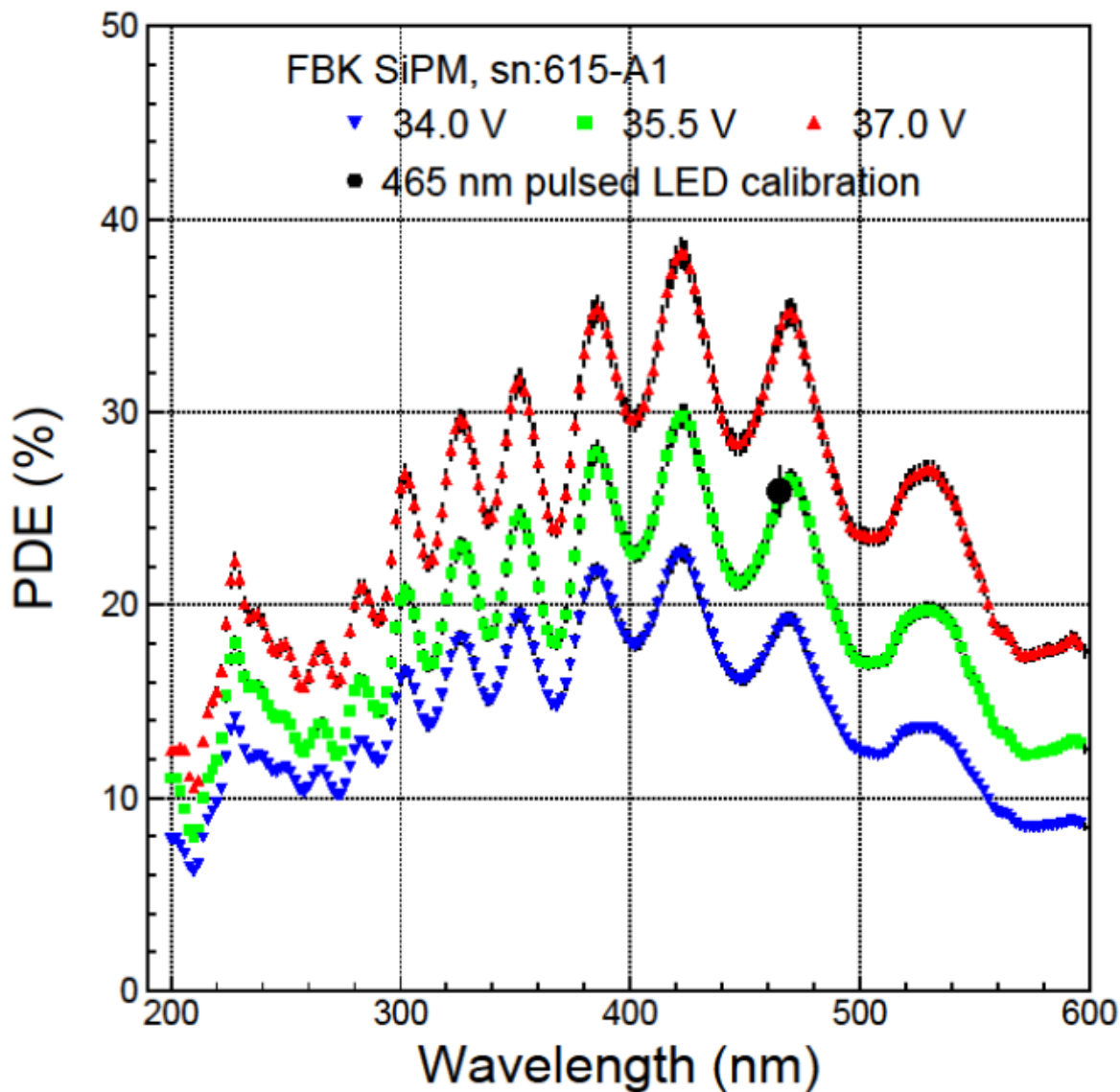
PDE: FBK 612-A1 SiPM

PDE scanned at 27.5, 29.0 and 30.5 V with gain measured.

Calibrated with a pulse LED @ 465 nm for SiPM at 29.0 V, as shown in slide 6.



PDE: FBK 615-A1 SiPM

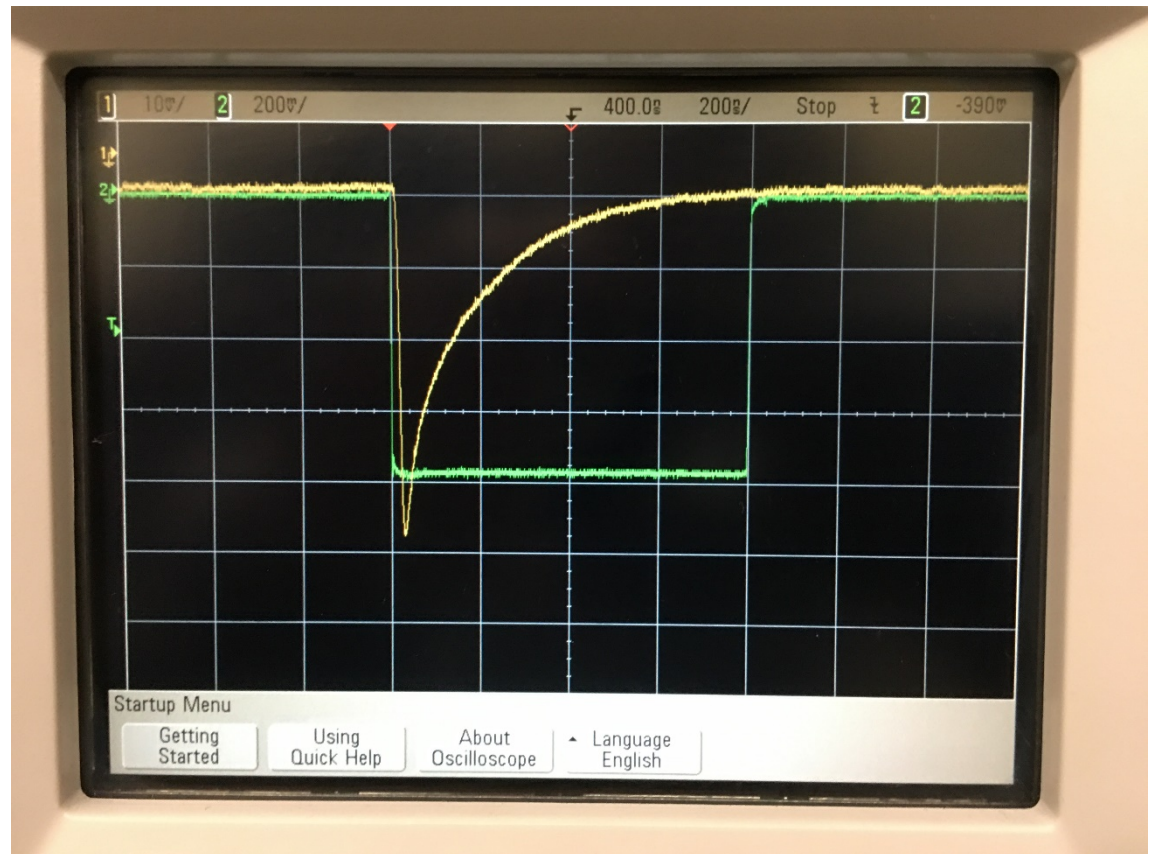
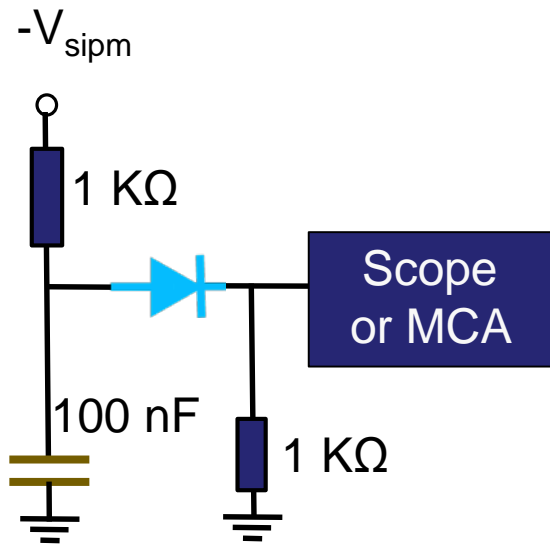


PDE scanned at 34.0, 35.5 and 37.0 V with gain measured.

Calibrated with a pulse LED @ 465 nm for SiPM at 35.5 V, as shown in slide 9.

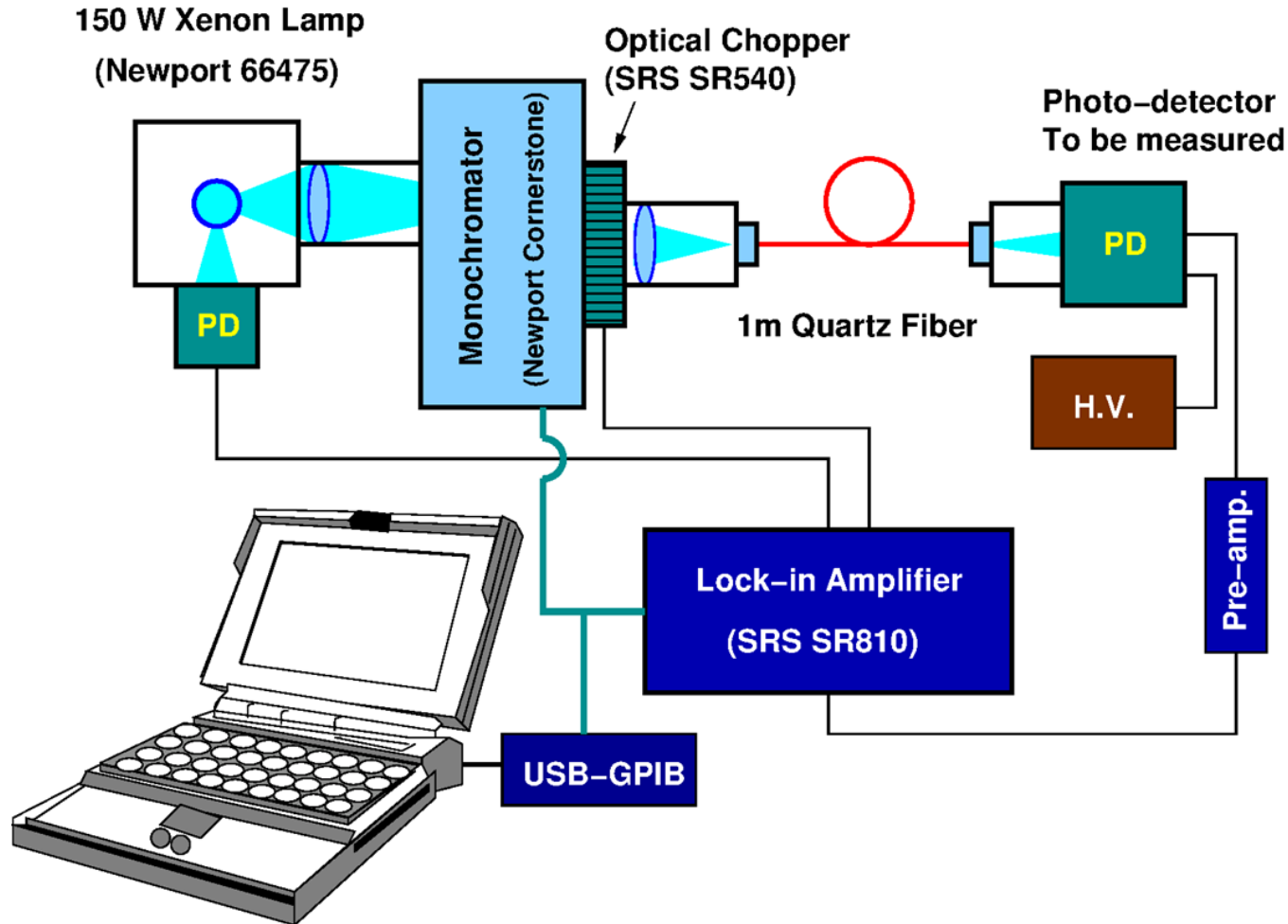
PDE Calibration with Pulsed LED at 465 nm

- Excited by a pulsed LED at 465 nm of ~ 10 ns, FBK611-616 SiPMs show similar pulse.
- PHS was measured with a gate of 800 ns by MCA .
- Input photon number was measured by a calibrated PiN diode (Newport 71650), p.e. # and PDE were determined by fitting photopeak width.



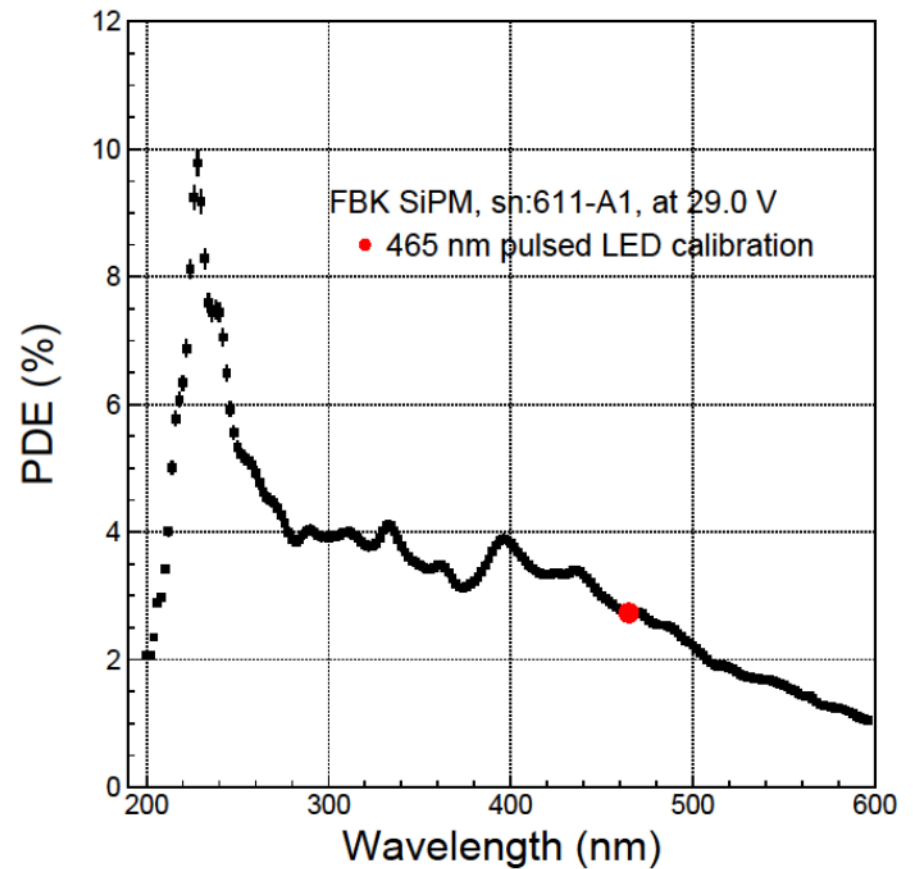
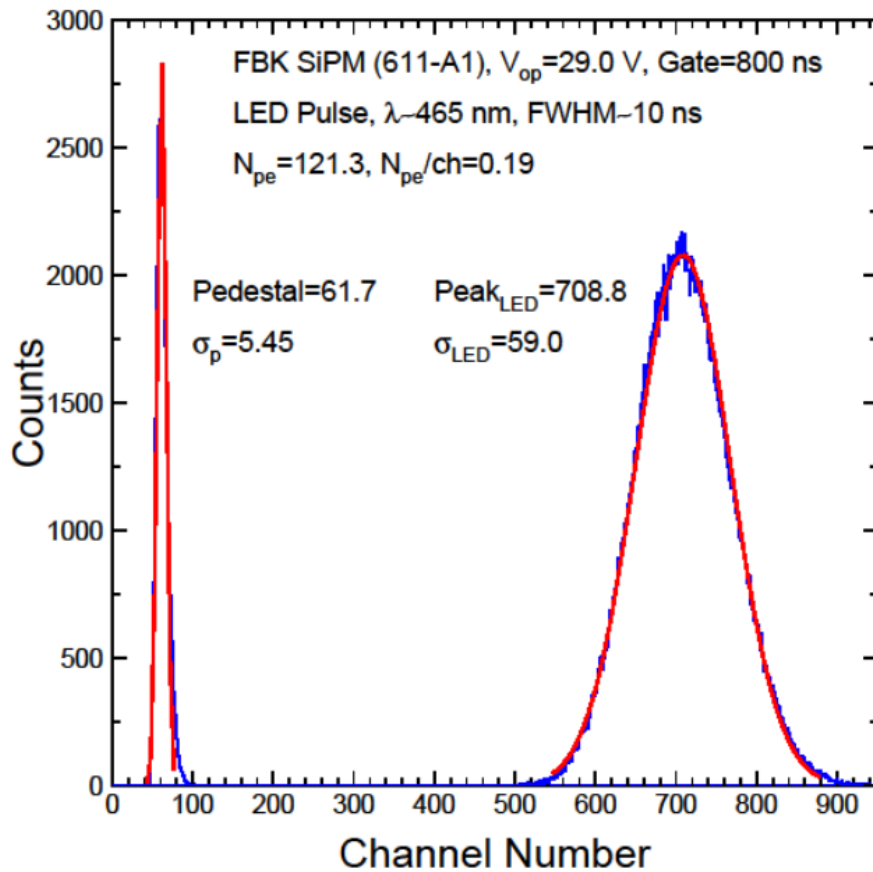
PDE as a Function of Wavelength

PDE was scanned from 200 to 600 nm by using a Xe lamp based spectrometer, and was calibrated at 465 nm



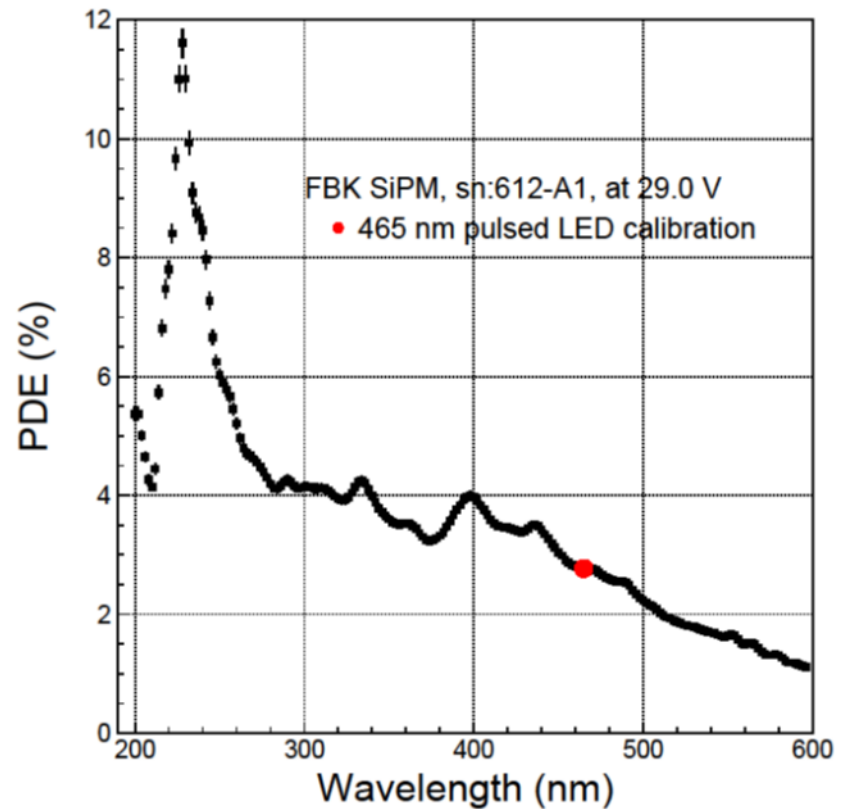
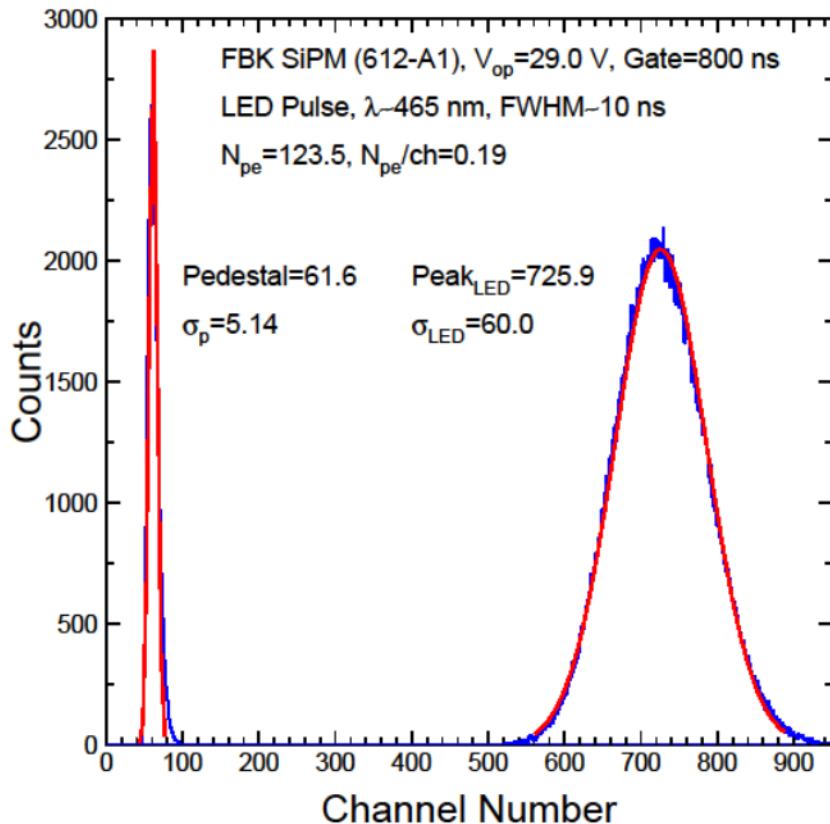
PDE: FBK611-A1 SiPM

Input photon #: 4,450; Photo-electron #: 121.3; PDE @ 465 nm: 2.7%



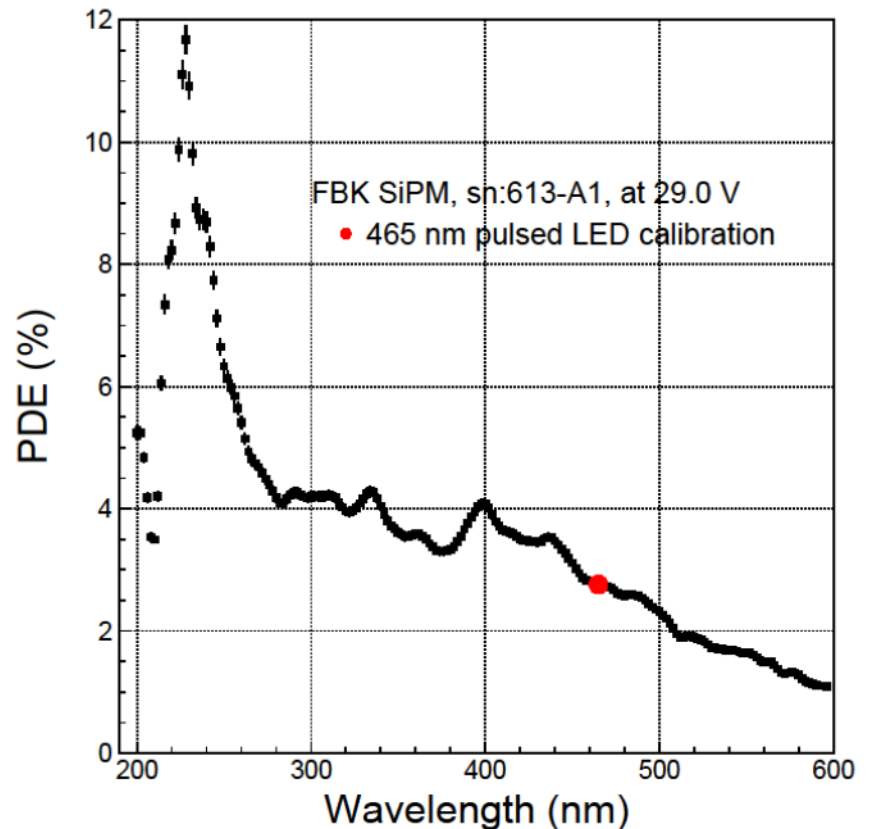
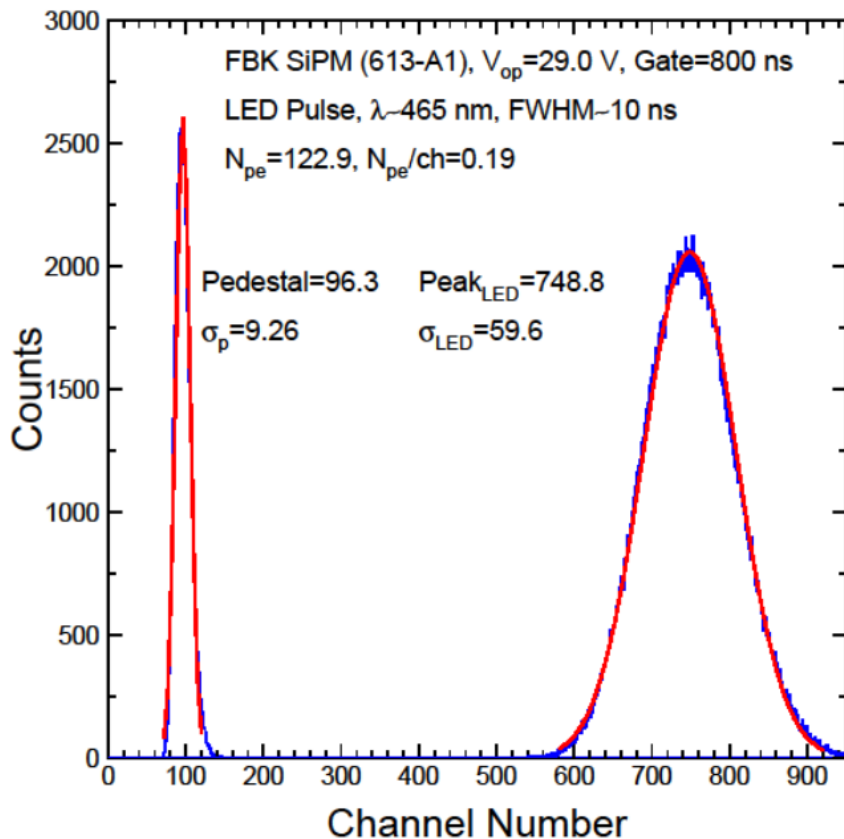
PDE: FBK 612-A1 SiPM

Input photon #: 4,450; Photo-electron #: 123.5; PDE @ 465 nm: 2.8%



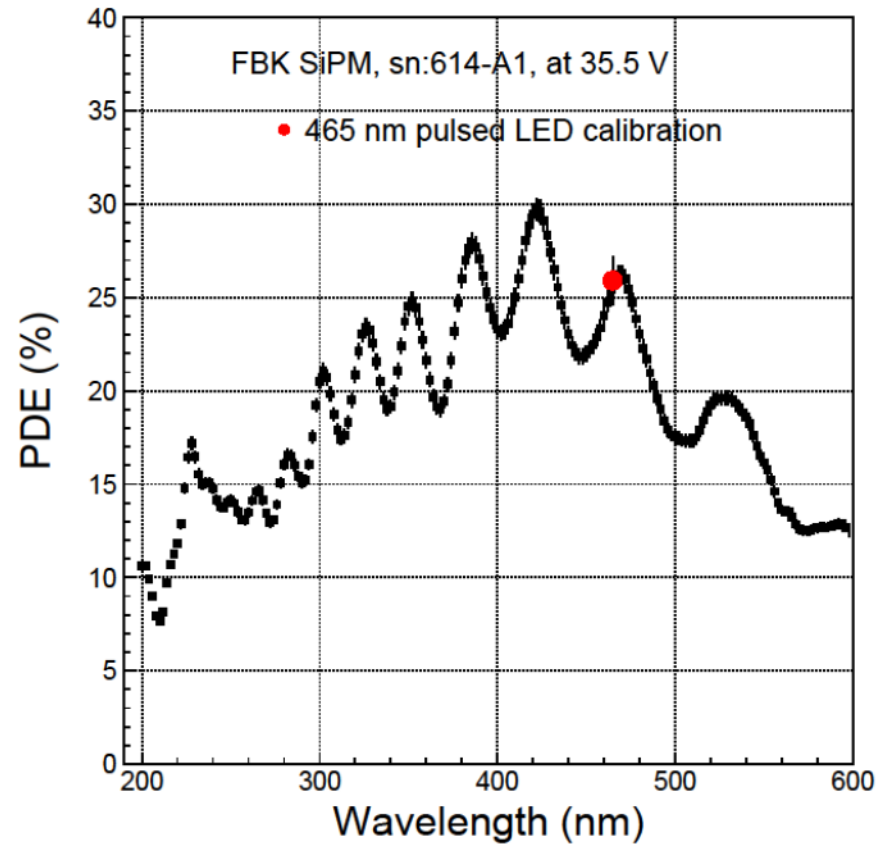
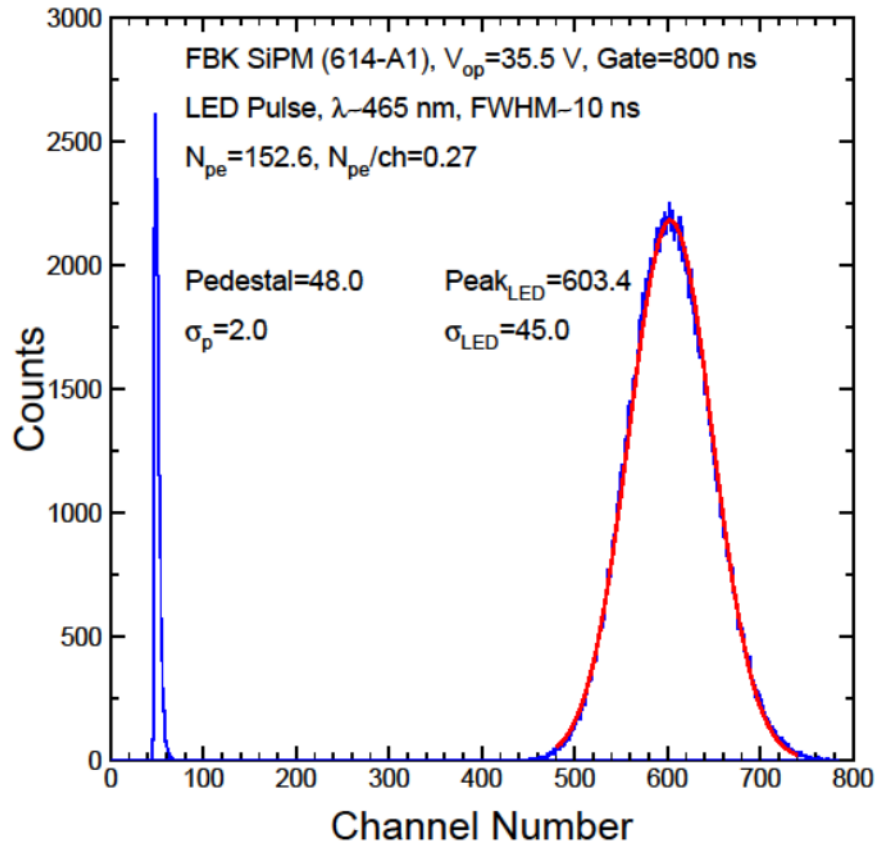
PDE: FBK613-A1 SiPM

Input photon #: 4,450; Photo-electron #: 122.9; PDE @ 465 nm: 2.8%



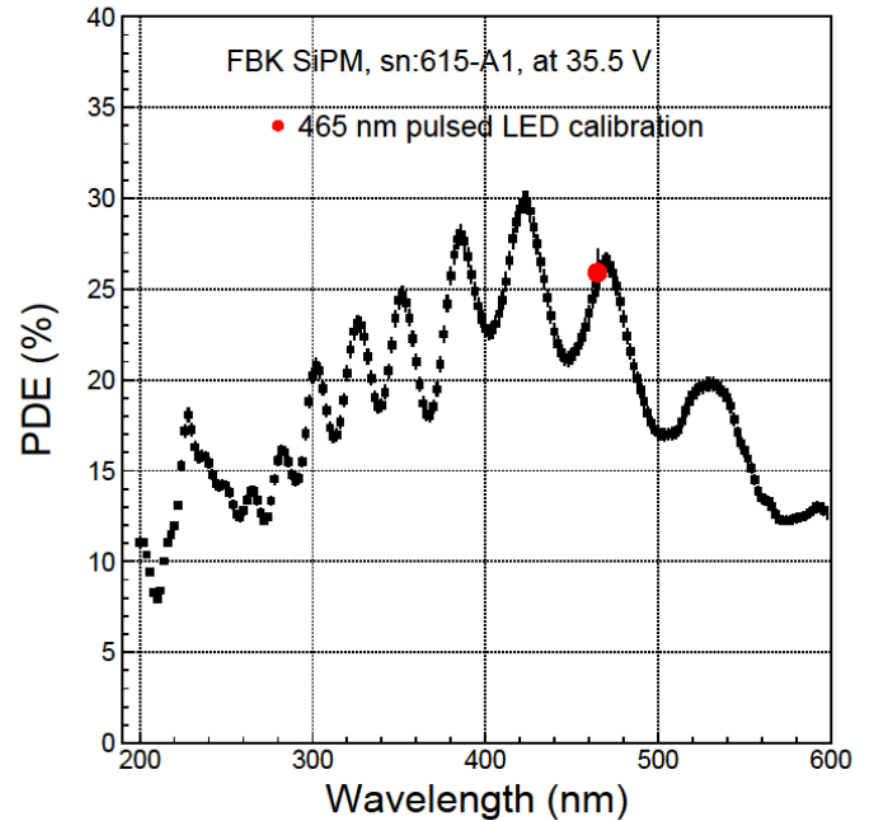
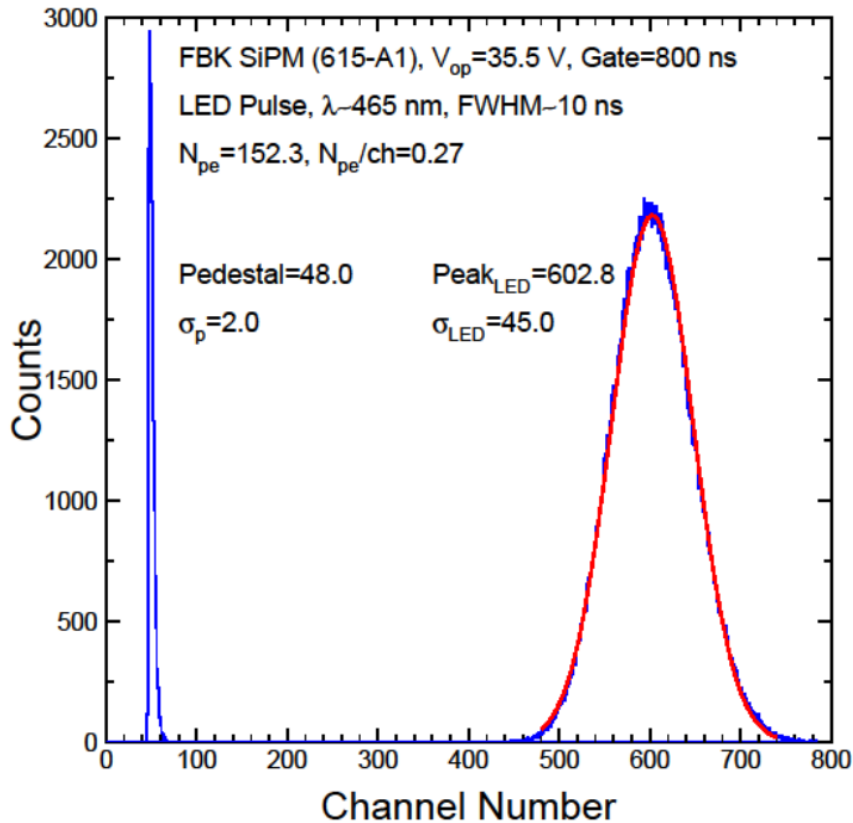
PDE: FBK614-A1 SiPM

Input photon #: 590; Photo-electron #: 152.6; PDE @ 465 nm: 25.9%



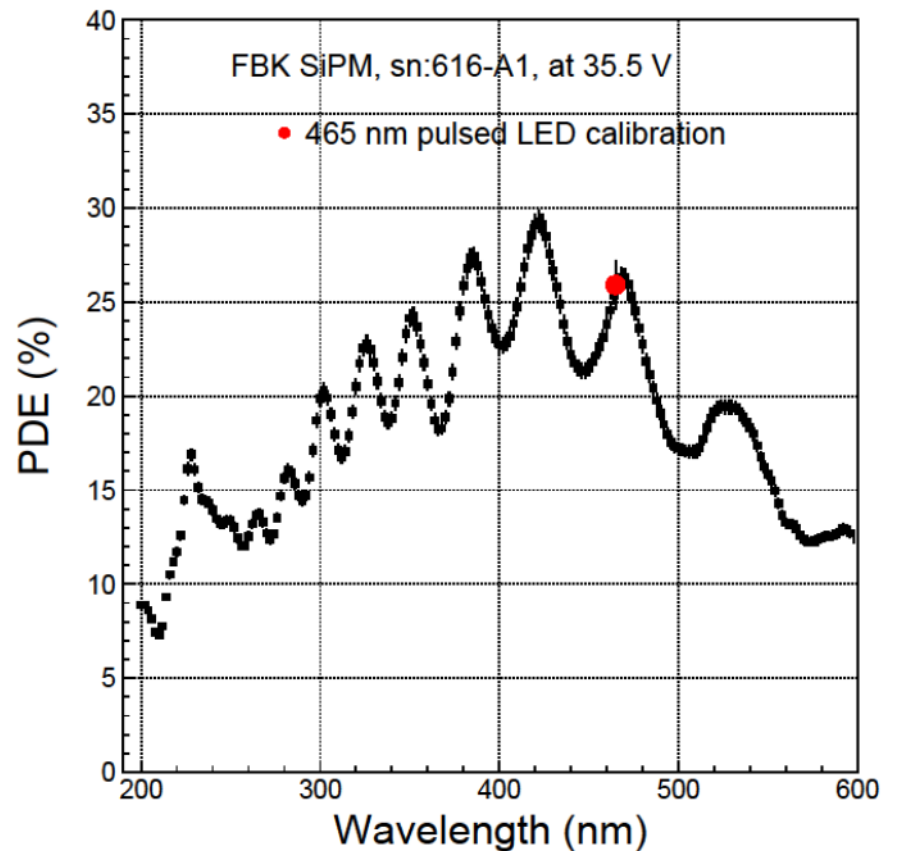
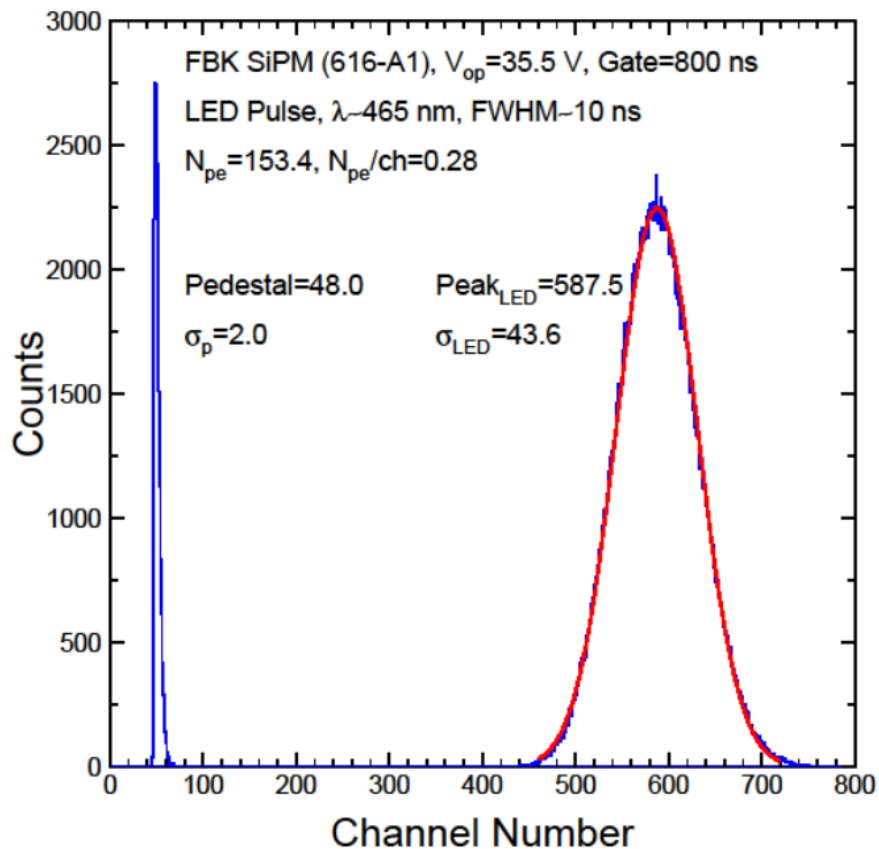
PDE: FBK615-A1 SiPM

Input photon #: 590; Photo-electron #: 152.3; PDE @ 465 nm: 25.8%



PDE: FBK616-A1 SiPM

Input photon #: 590; Photo-electron #: 153.4; PDE @ 465 nm: 26.0%



Summary: Six FBK SiPMs: 611 - 616

SN	V_{br} (V)	V_{op} (V)	PDE at 465 nm (%)
611A-1	25.0	29.0	2.7
612A-1	25.0	29.0	2.8
613A-1	25.0	29.0	2.8
614A-1	31.5	35.5	25.9
615A-1	31.5	35.5	25.8
616A-1	31.5	35.5	26.0