

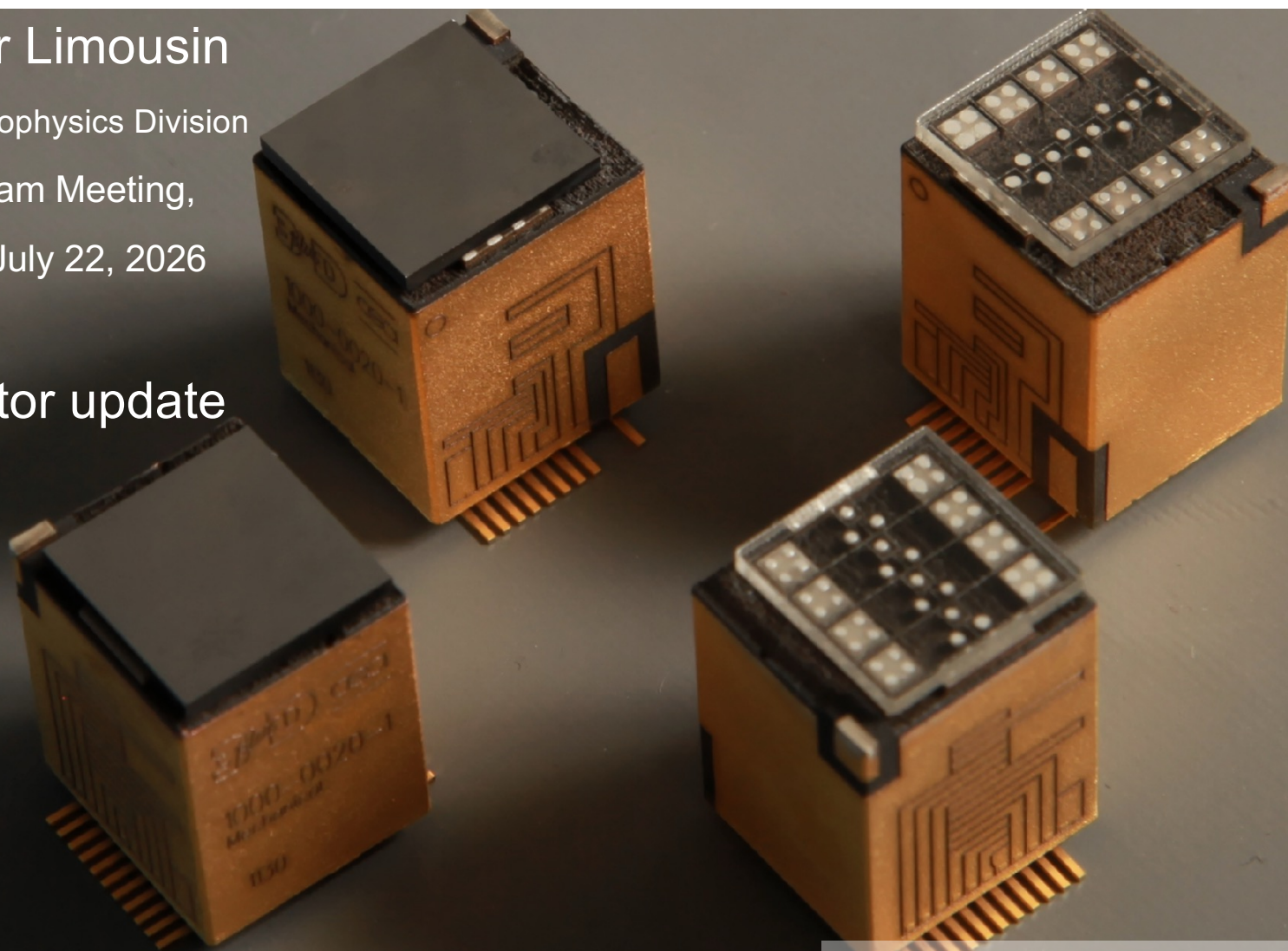
Olivier Limousin

CEA Astrophysics Division

STIX Team Meeting,

Dublin, July 22, 2026

Detector update

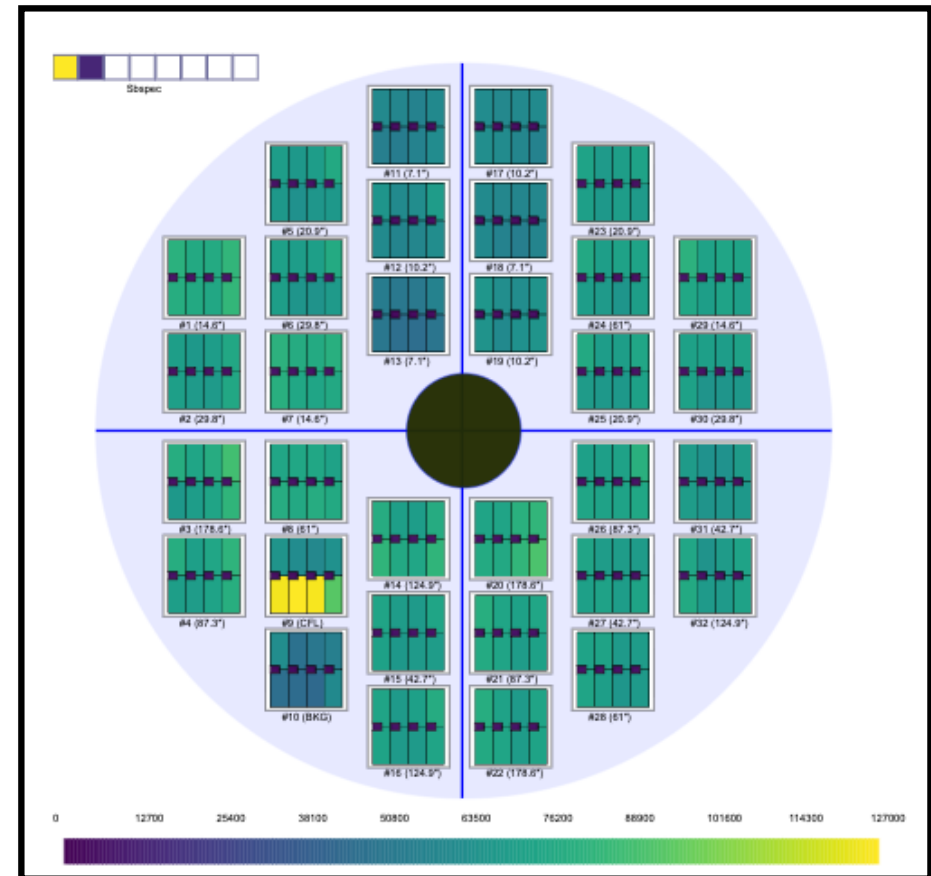


Picture: first Caliste-SO prototype, 3 august 2011

FACT SHEET



- 100% pixels good (2 are “snaky”)
- Low threshold 3.2 keV for all channels
- No change in HV settings -240V
- $I_{\text{comp}} 2$ (compensating current)
- Detector fairly stable over time
- Progressive aging of the detectors
- Ba-133 decay, lower background



SUMMARY

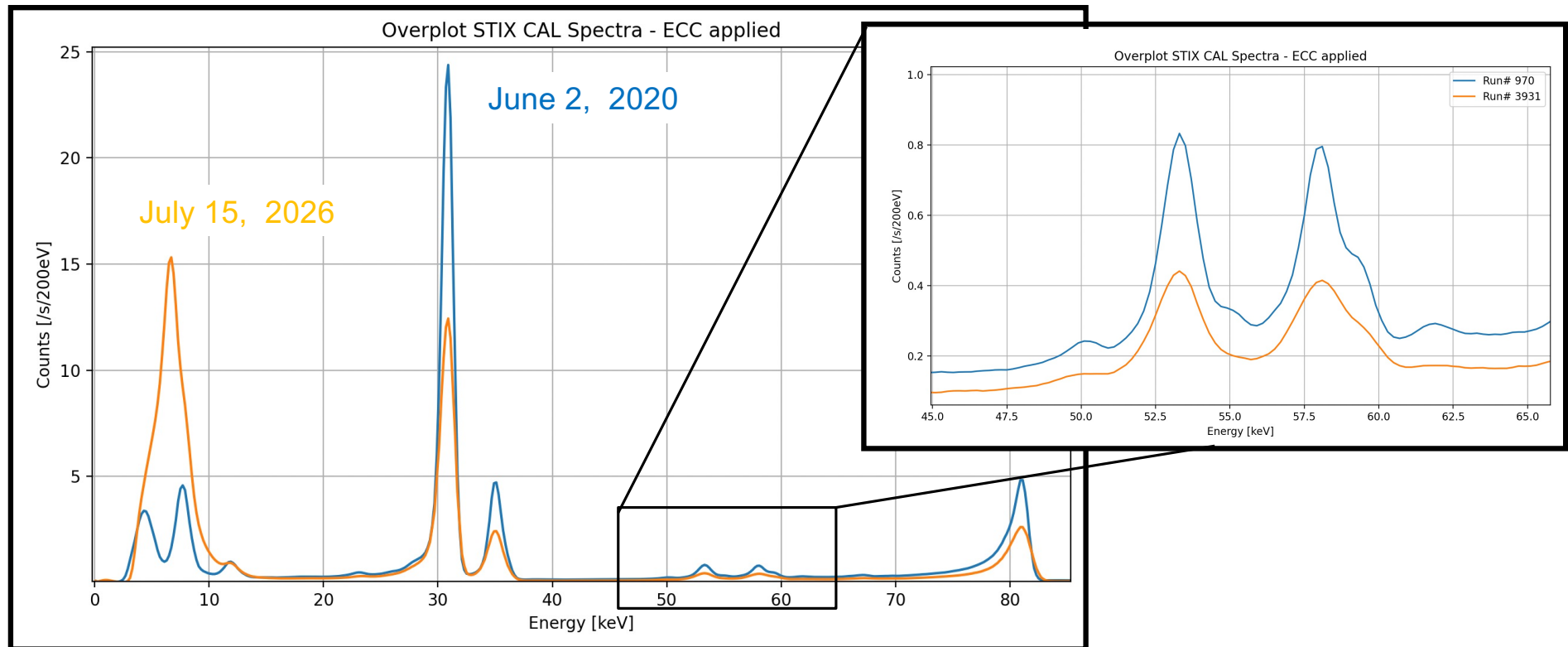


- Detector monitoring (usual time series, Gain, offset, Energy Resolution, ...)
 - ❖ A lot of work is going on with ASIC simulations, recap of radiation ground testing reanalysis (ASIC, CdTe) ...

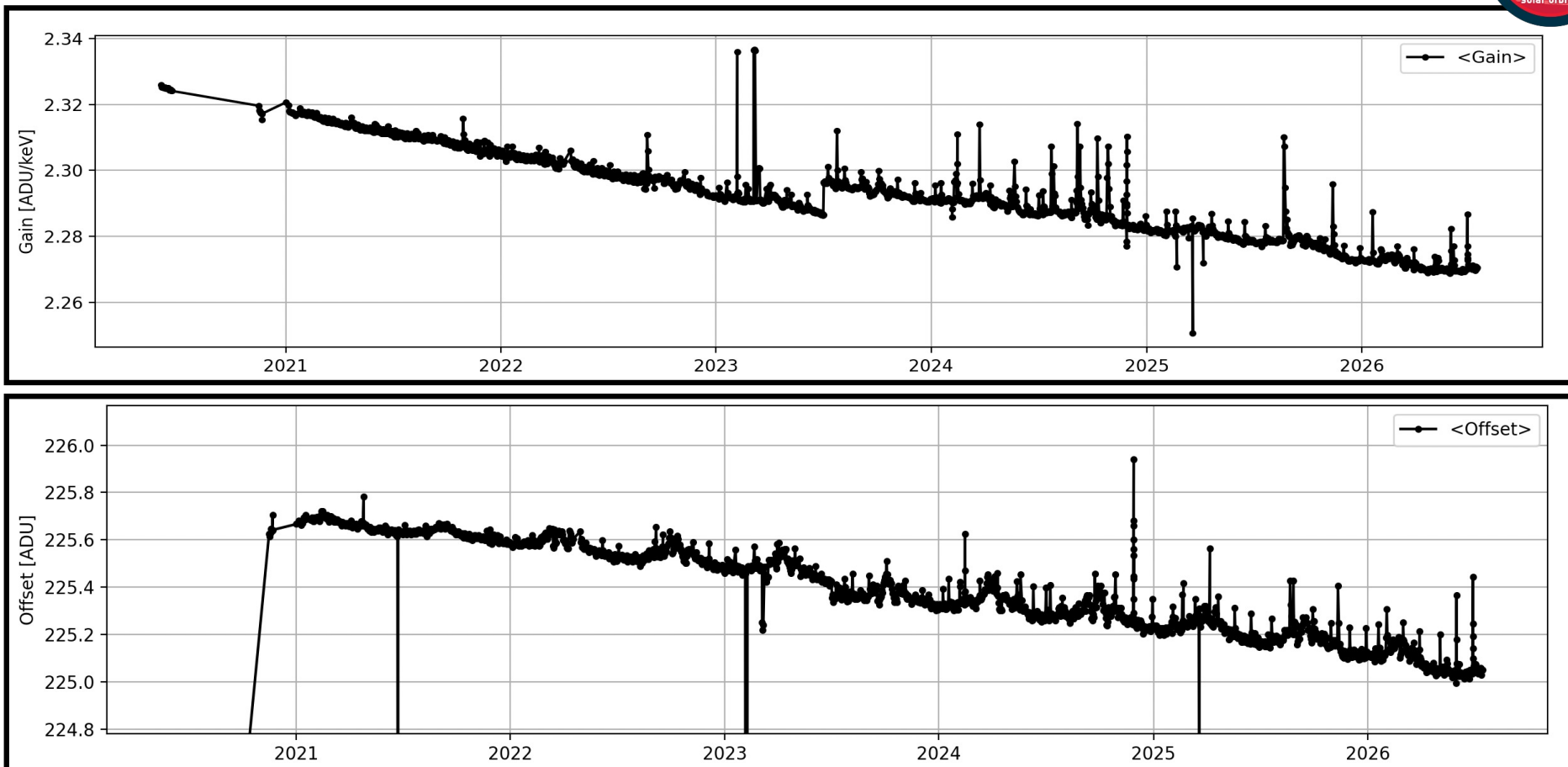
- Detector Aging Analysis progress
 - ❖ Work in progress to extract the electrons/holes transport properties, and electric field

- High Voltage depolarization and Calibration
 - ❖ 2 recent campaigns to analyze the calibration after HV reset

SPECTRA



GAIN & OFFSET



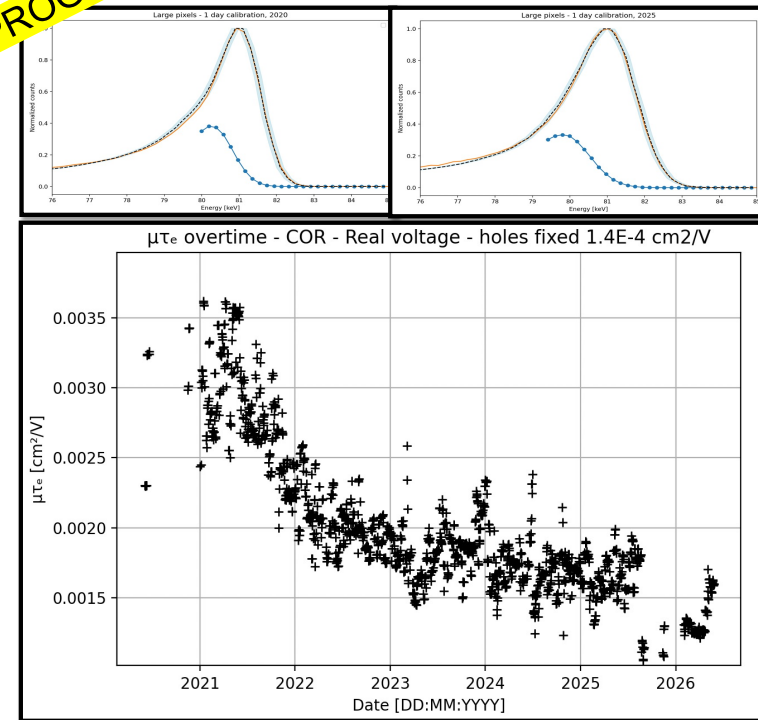
DETECTOR AGING



Hecht Spectral fitting

- Focus on 81 keV line shape
- $(\mu\tau)_{el}$ estimated to drop in 5 years
 - from $3.15 \cdot 10^{-3} \text{ cm}^2/\text{V}$
 - down to $1.6 \cdot 10^{-3} \text{ cm}^2/\text{V}$
- $(\mu\tau)_{holes}$ estimated to remain unchanged overtime
 - $\sim 1.4 \cdot 10^{-4} \text{ cm}^2/\text{V}$ → consistent with INTEGRAL satellite measurements

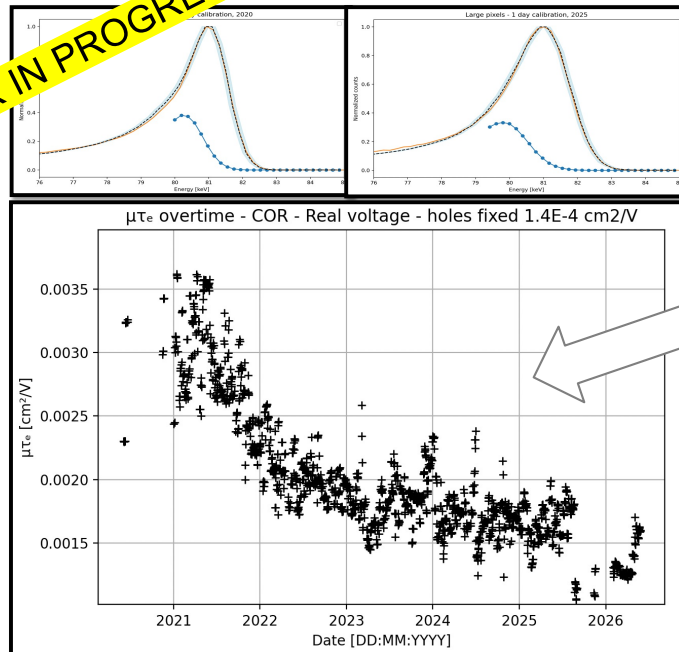
WORK IN PROGRESS



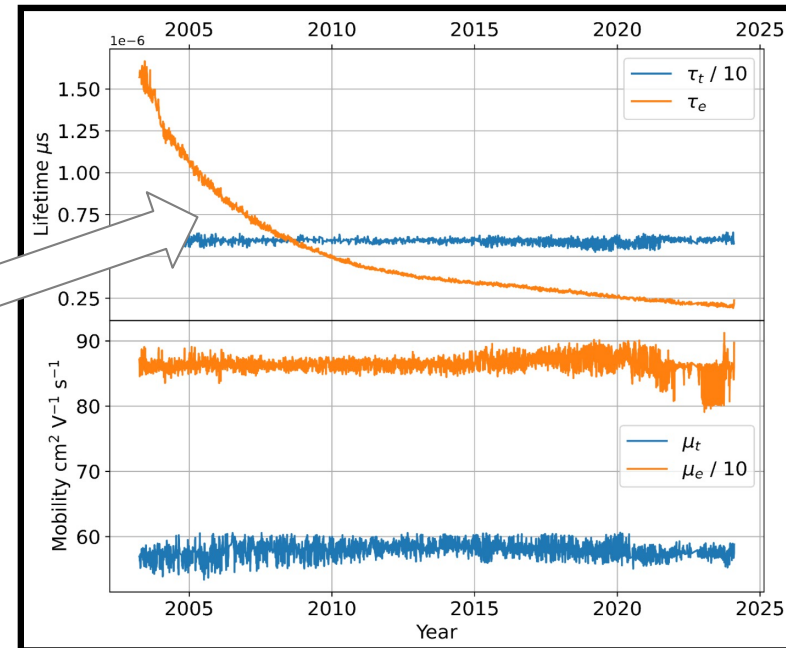
DETECTOR AGING



WORK IN PROGRESS

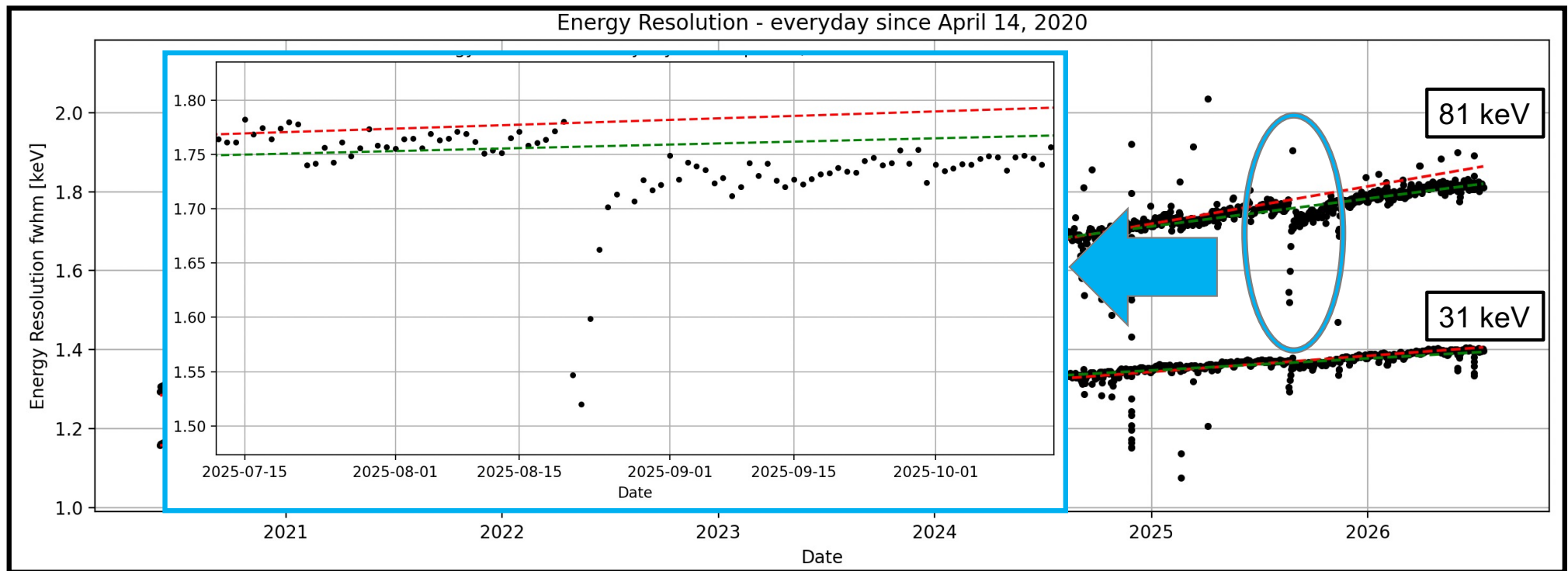


STIX



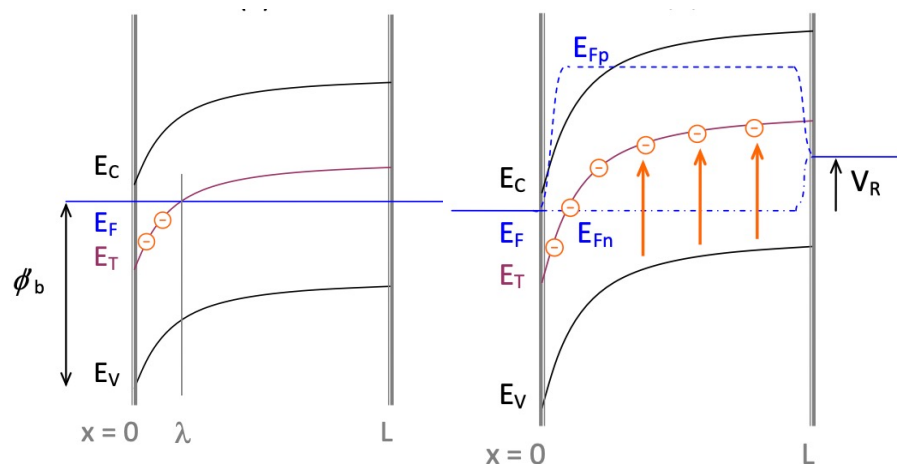
INTEGRAL/ISGRI

ENERGY RESOLUTION



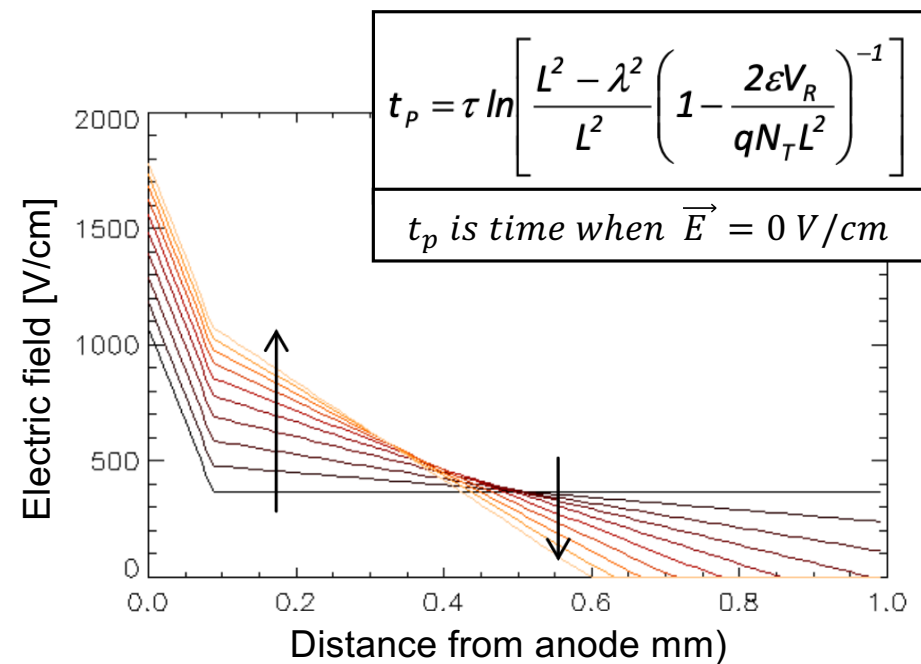


CDTE DETECTOR POLARIZATION, WHAT'S THAT?



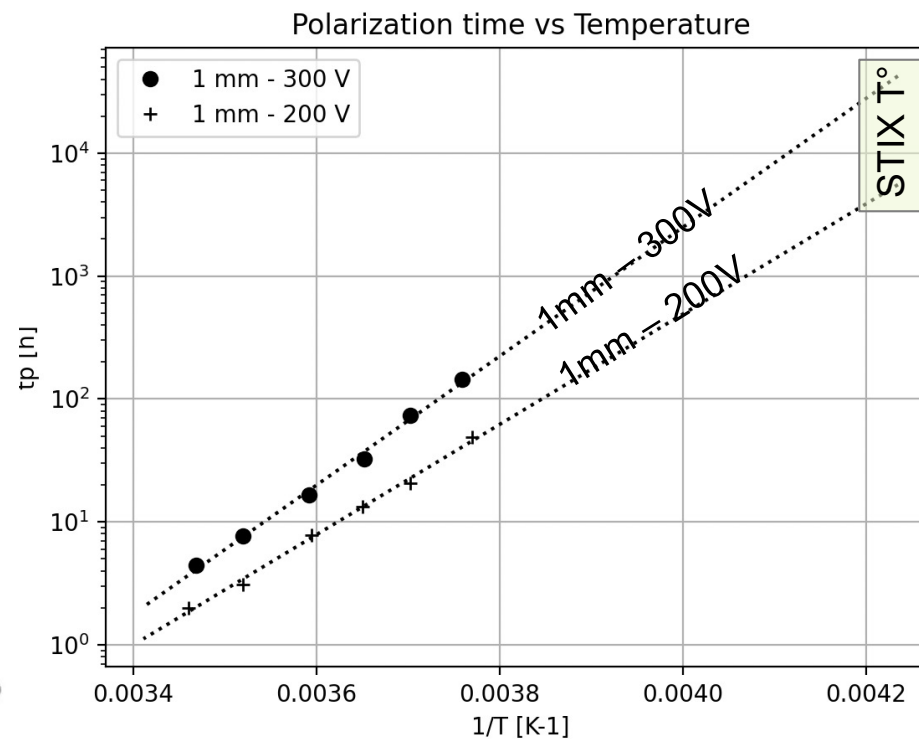
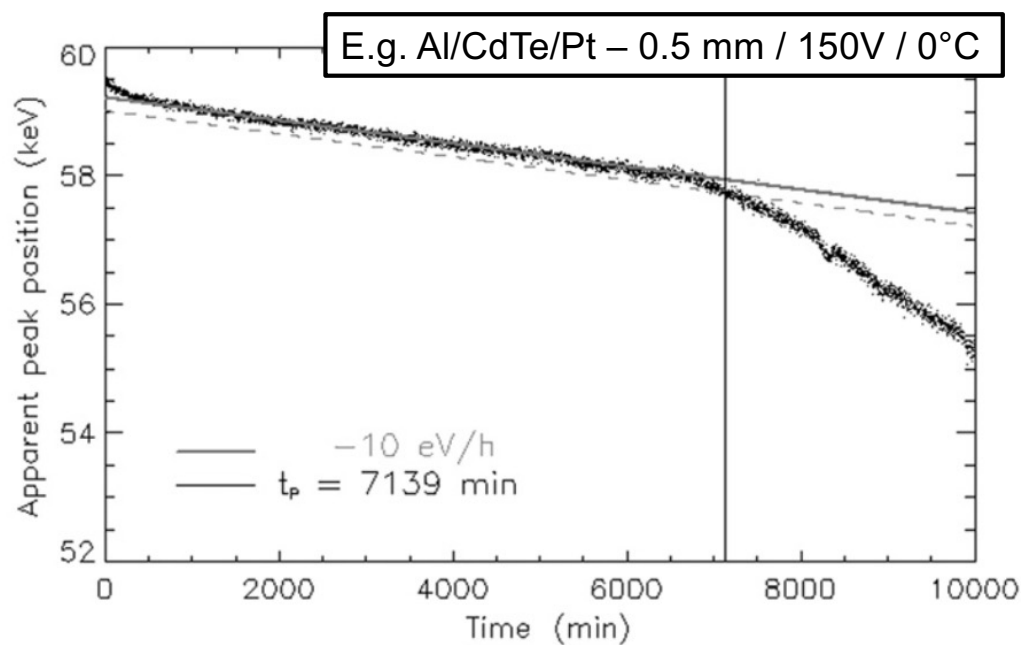
HV = 0V

HV ≠ 0V





CDTE DETECTOR POLARIZATION, WHAT'S THAT?

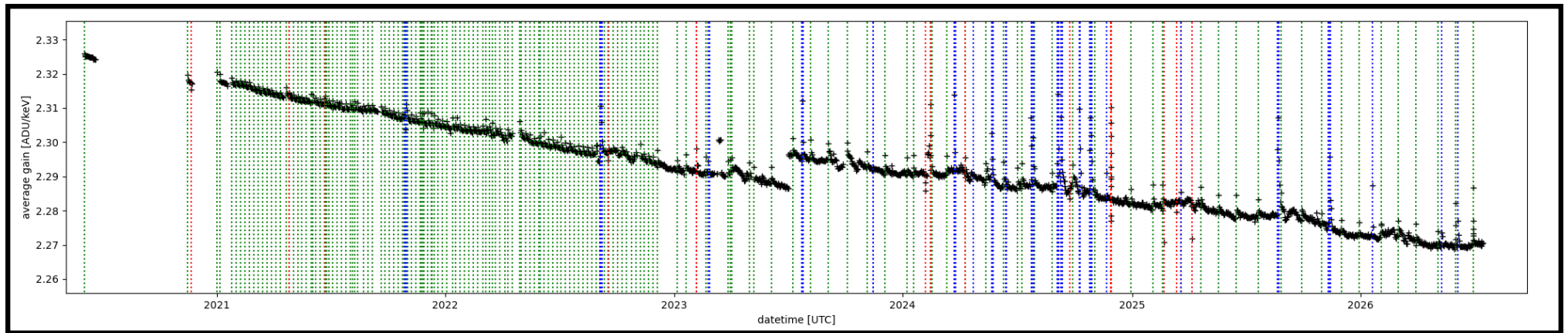


t_p is $\sim 1.5 \text{ years}$ for STIX at -37°C

DEPOLARIZATION



Green - Depolarization
Blue - SEP
Red - short exposure



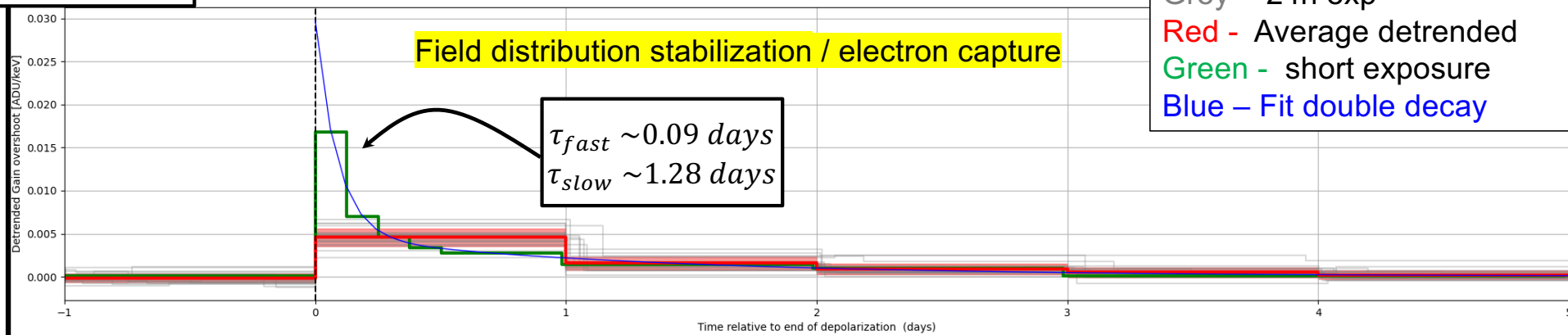
Weekly depolarization

Monthly depolarization

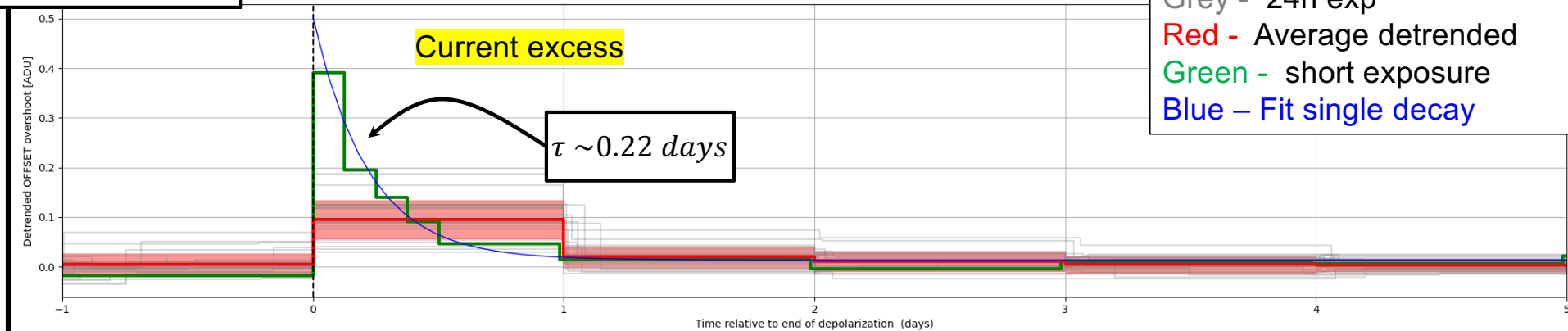


DEPOLARIZATION

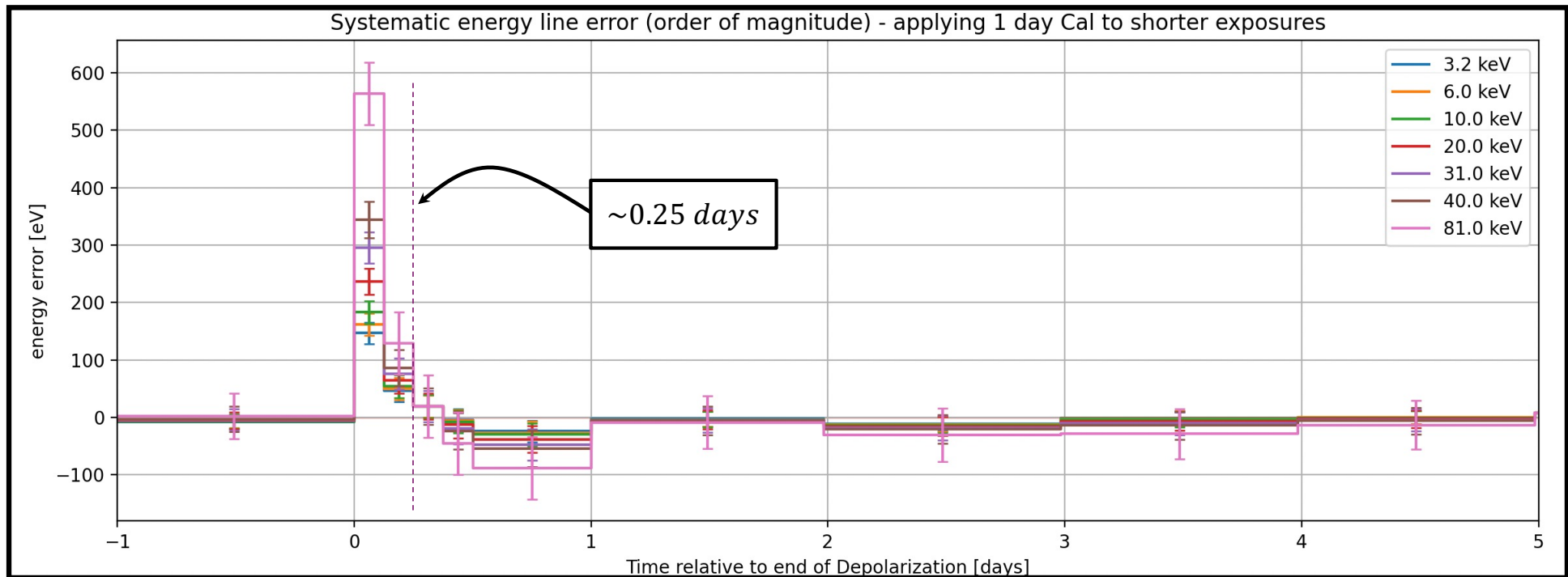
GAIN excess



OFFSET excess



CALIBRATION SYST. ERROR ESTIMATES



THANKS, BISOUS, BISOUS, BISOUS !

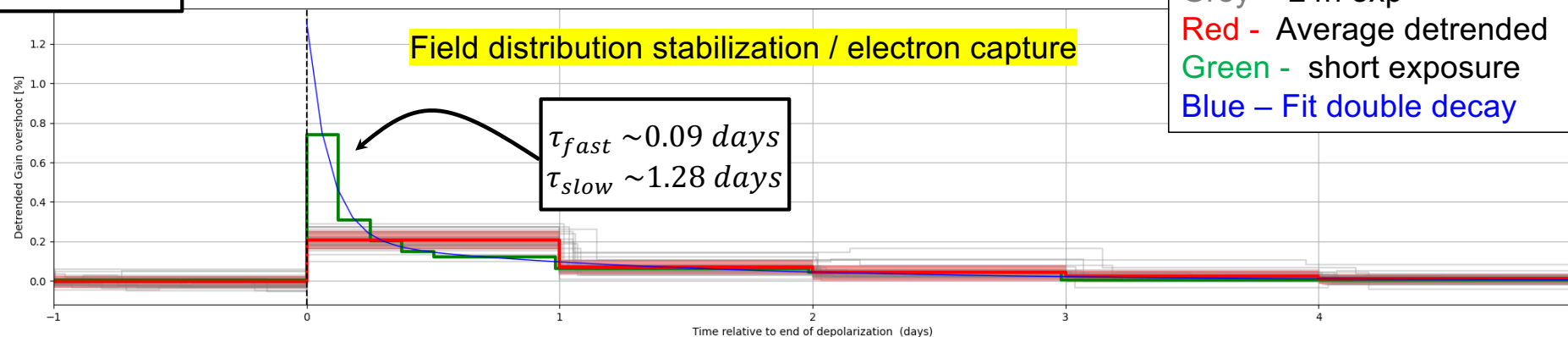




DEPOLARIZATION

GAIN excess

Grey - 24h exp
Red - Average detrended
Green - short exposure
Blue - Fit double decay



OFFSET excess

Grey - 24h exp
Red - Average detrended
Green - short exposure
Blue - Fit single decay

