# Temperature Dependence of Charge Carrier Transport in Germanium Detectors

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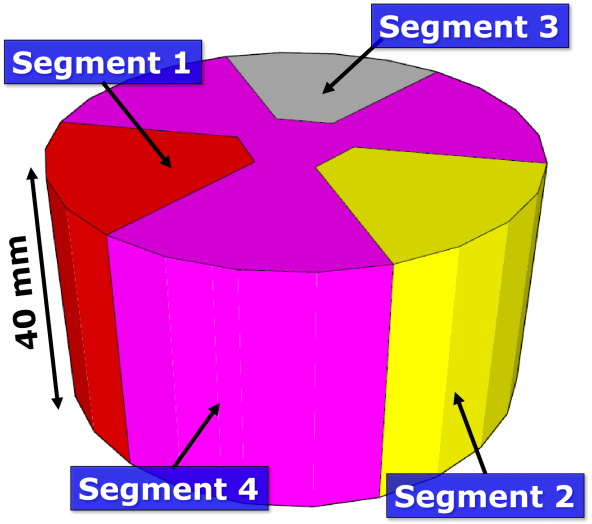
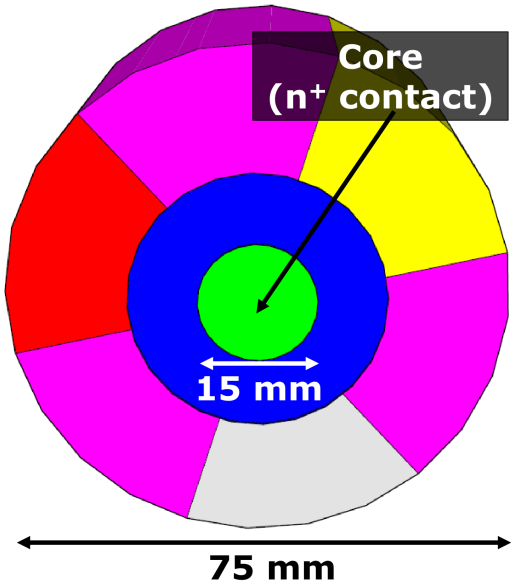
# Segmented BEGe Detector




- Point Contact Detector
  - n-type
  - “Core”
  - Distinct electric field
- 4-fold Sementation
  - “Mantle”→ Seg 1-4
  - Additional information
  - Study charge drift

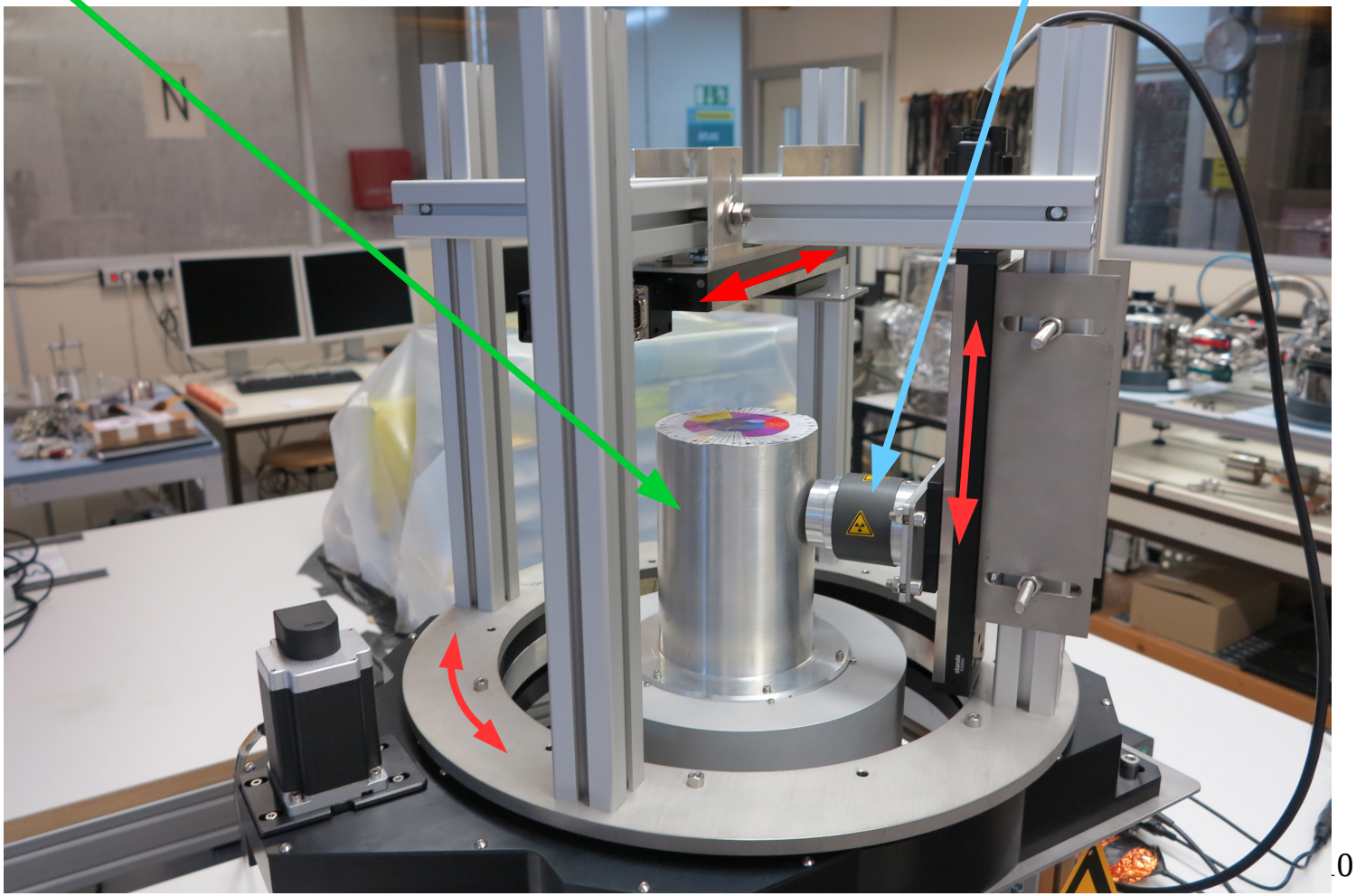
# Experimental Setup: “K2”

**Collimated $^{133}$Ba Source**

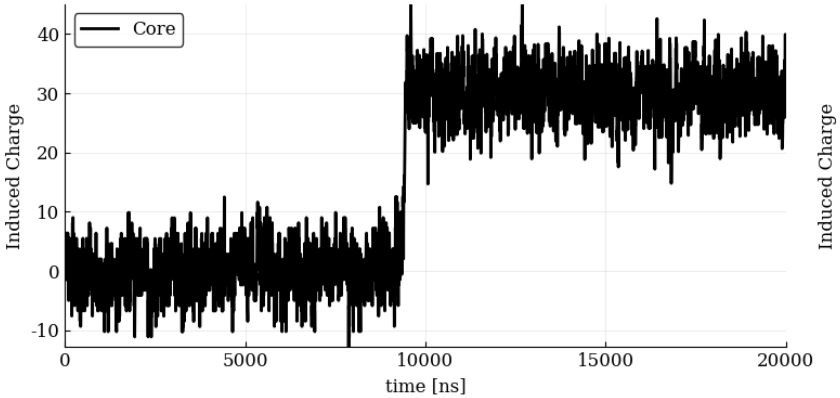
→ Low energy gammas
to produce surface events

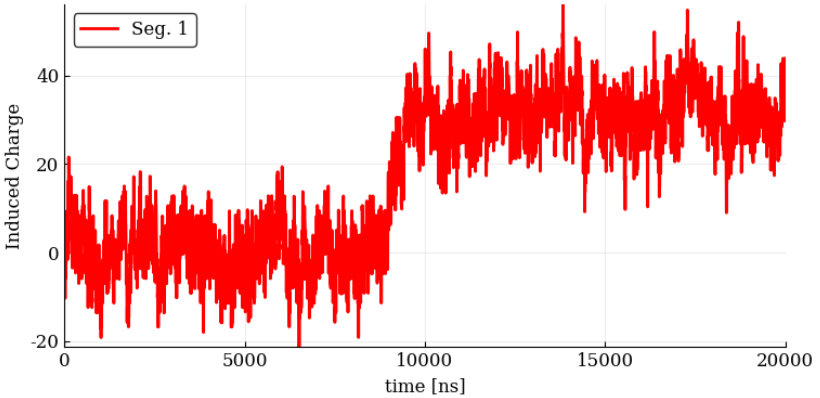
**Electrically cooled cryostat**

**3-axes scanning stages**

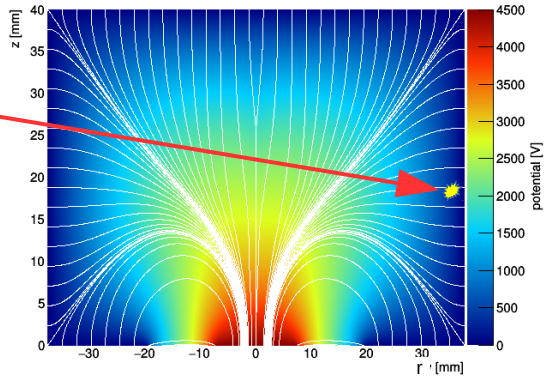


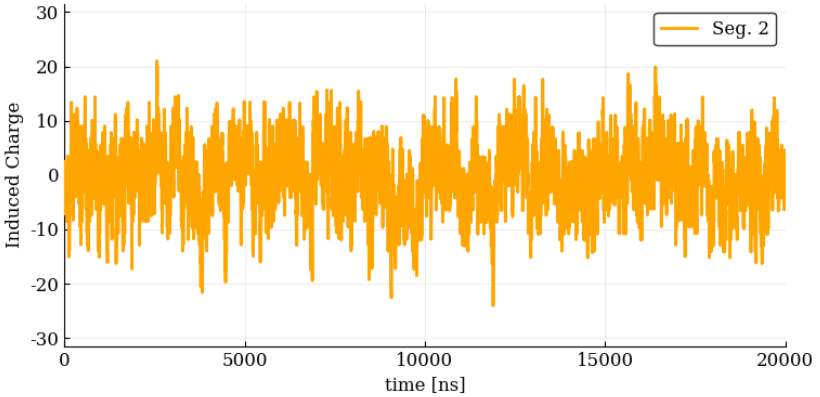
# Example Pulse

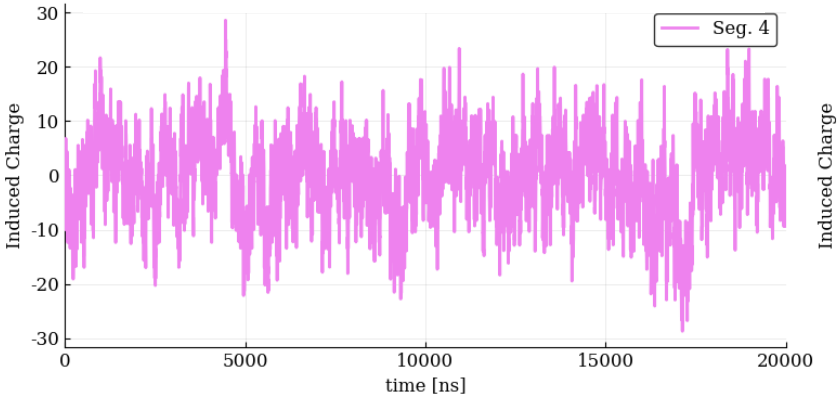


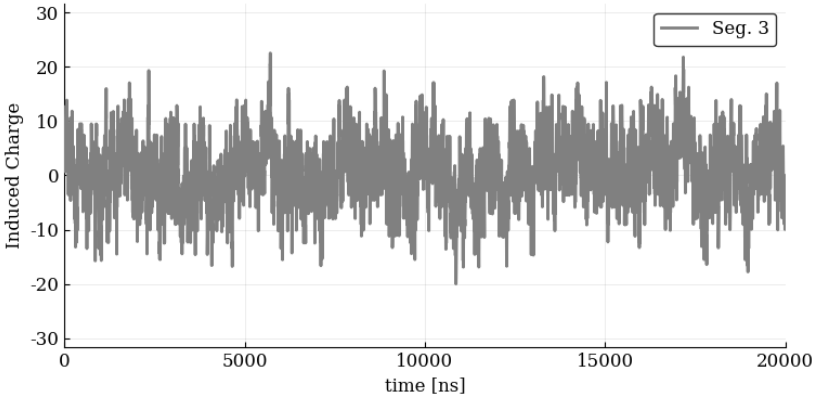




near-surface event



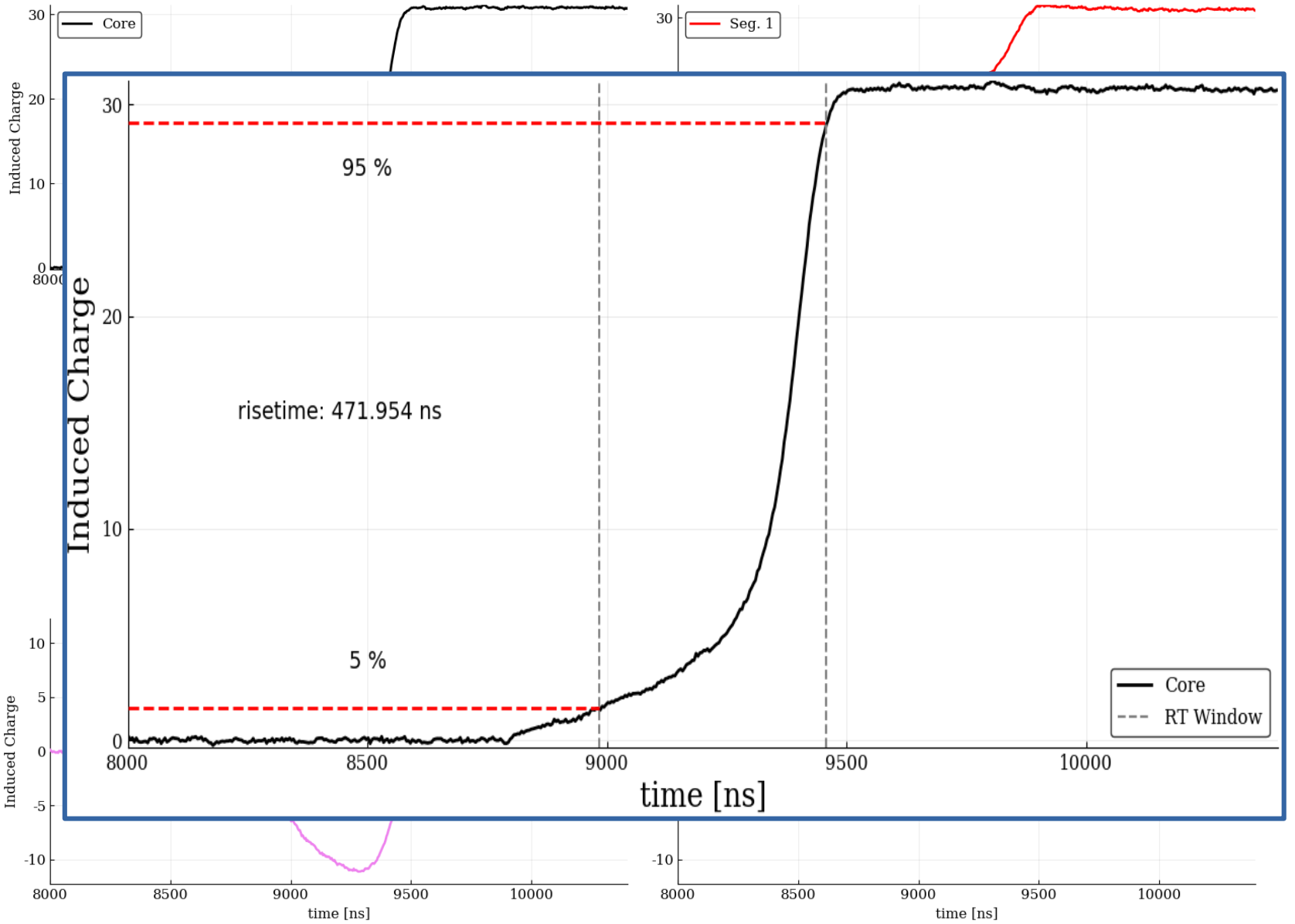



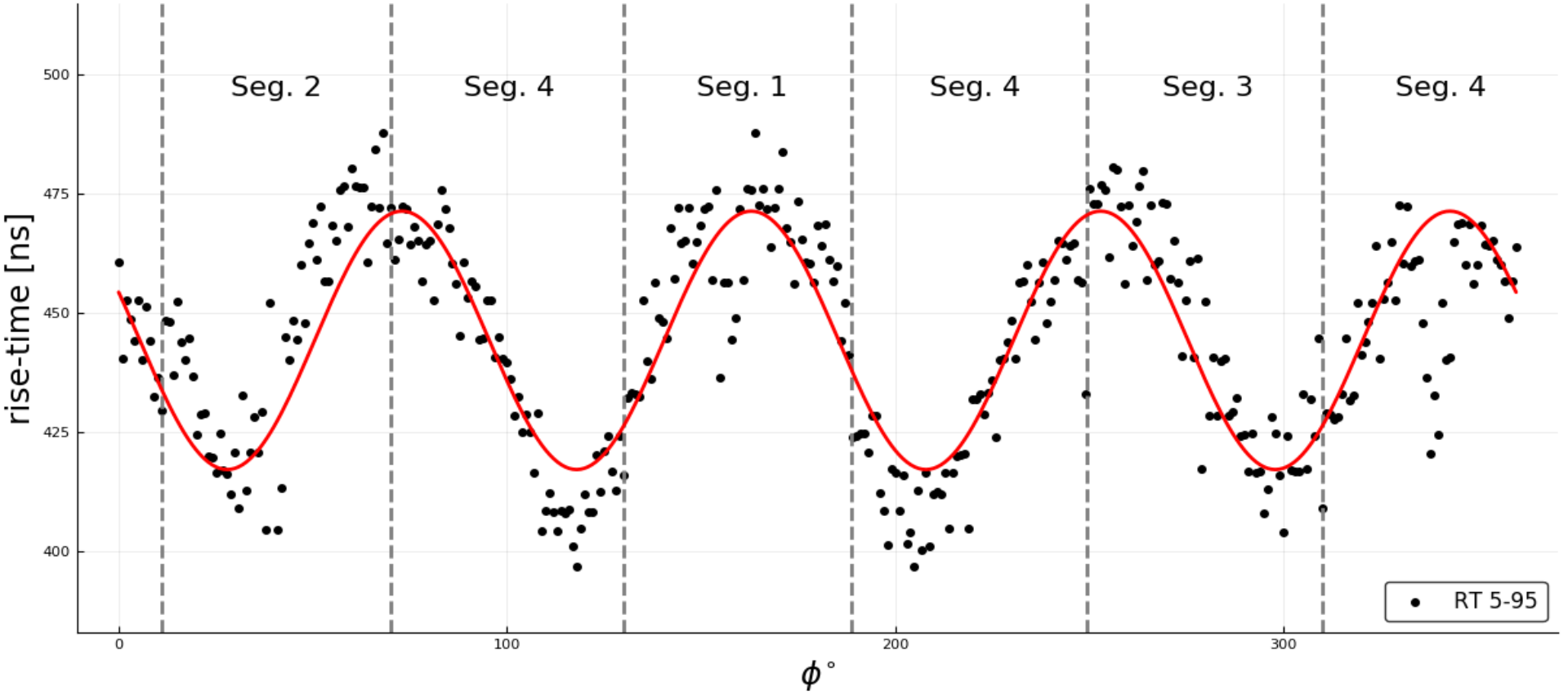

Φ=160 deg, E=31 keV, T=98 K

# Super Pulse



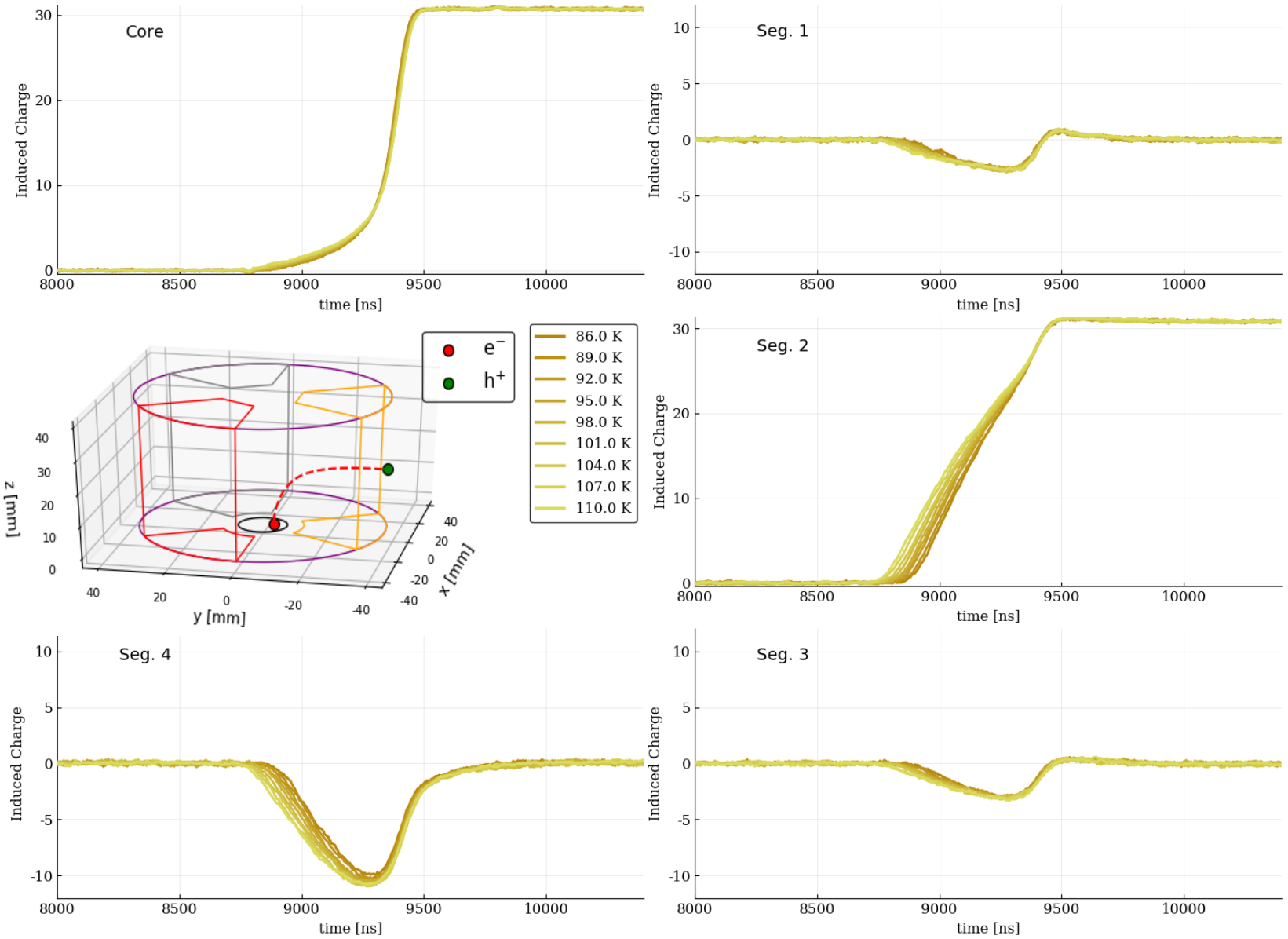

Φ=160 deg, E=31 keV, T=98 K

# Influence of Crystal Axes



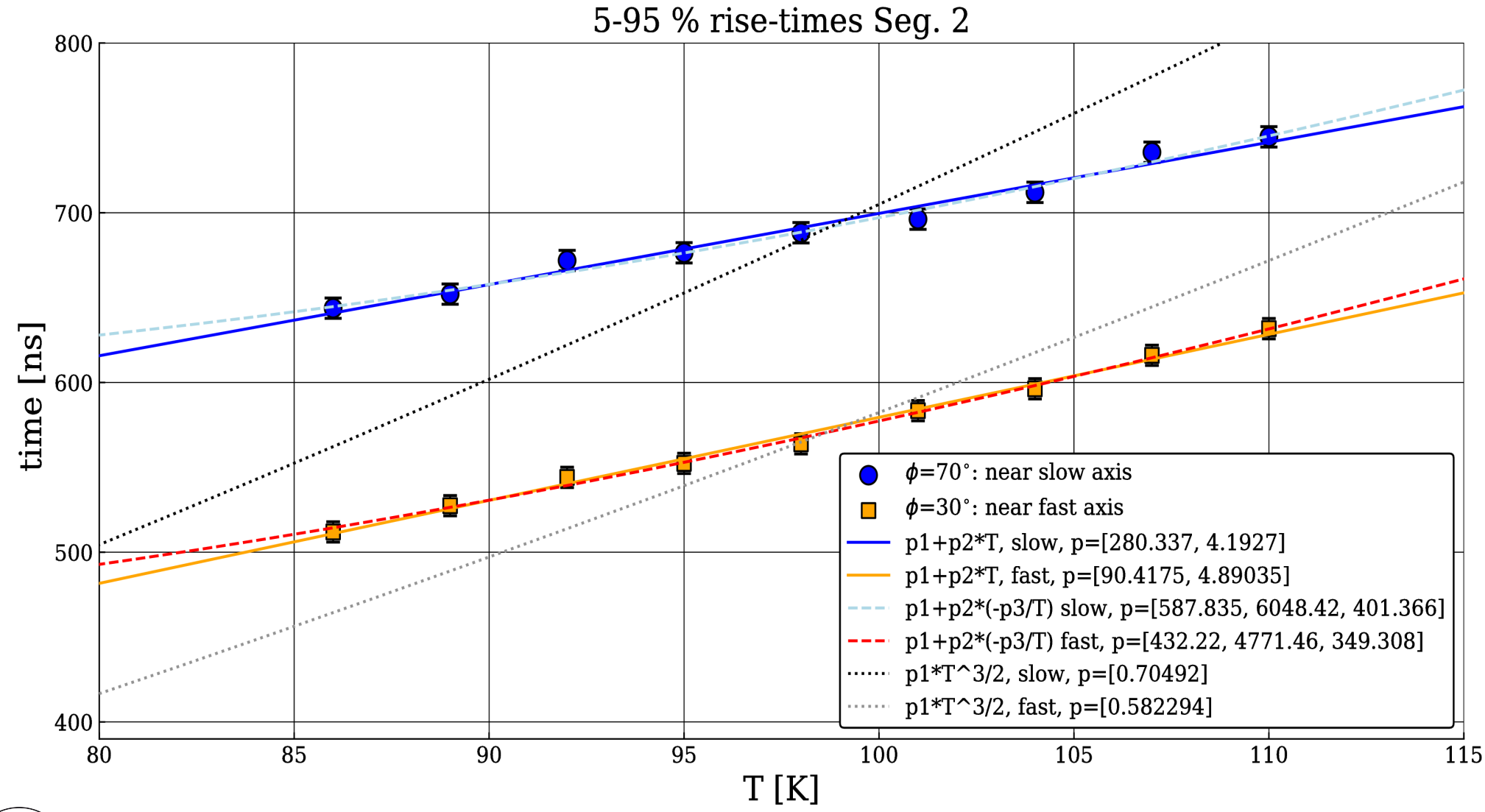

- 360 deg scan around the side of the detector
- Core rise-times from 5-95%  from 31 keV Supe Pulses
- “Slow Axes”: <110> and “Fast Axes”: <100>, <010>

# First Results on T-dependence




Φ=30 deg, E=31 keV, T=98 K, near “Fast Axis”

# First Results on T-dependence




From E=31 keV Super Pulses