A Couple of Untold Stories of PCA

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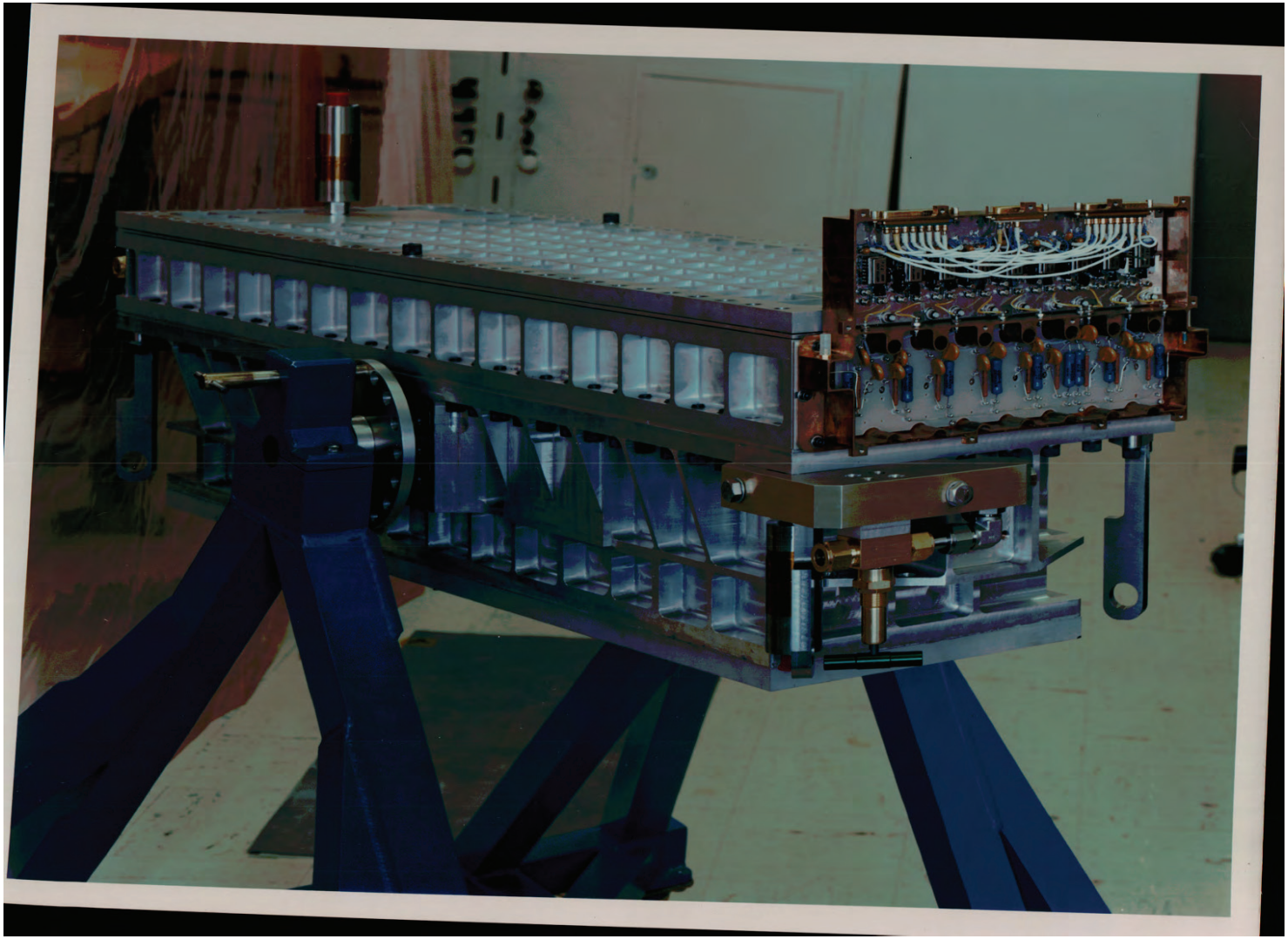
Background Comparison

- RXTE/PCA: ~3×10^{-4}counts/kev/s/cm^2
  (Jahoda et al. 2006)

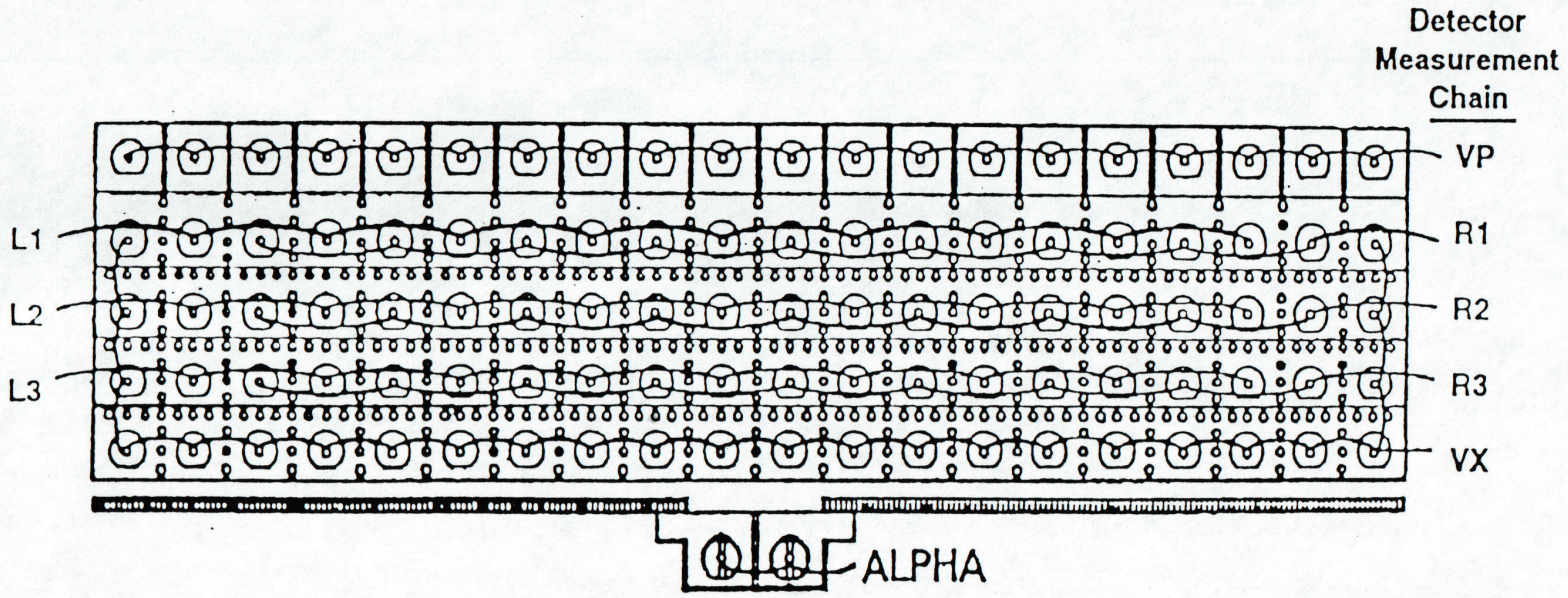
- Chandra/ACIS: ~2×10^{-2}
  (Plucinsky & Varani 2000)

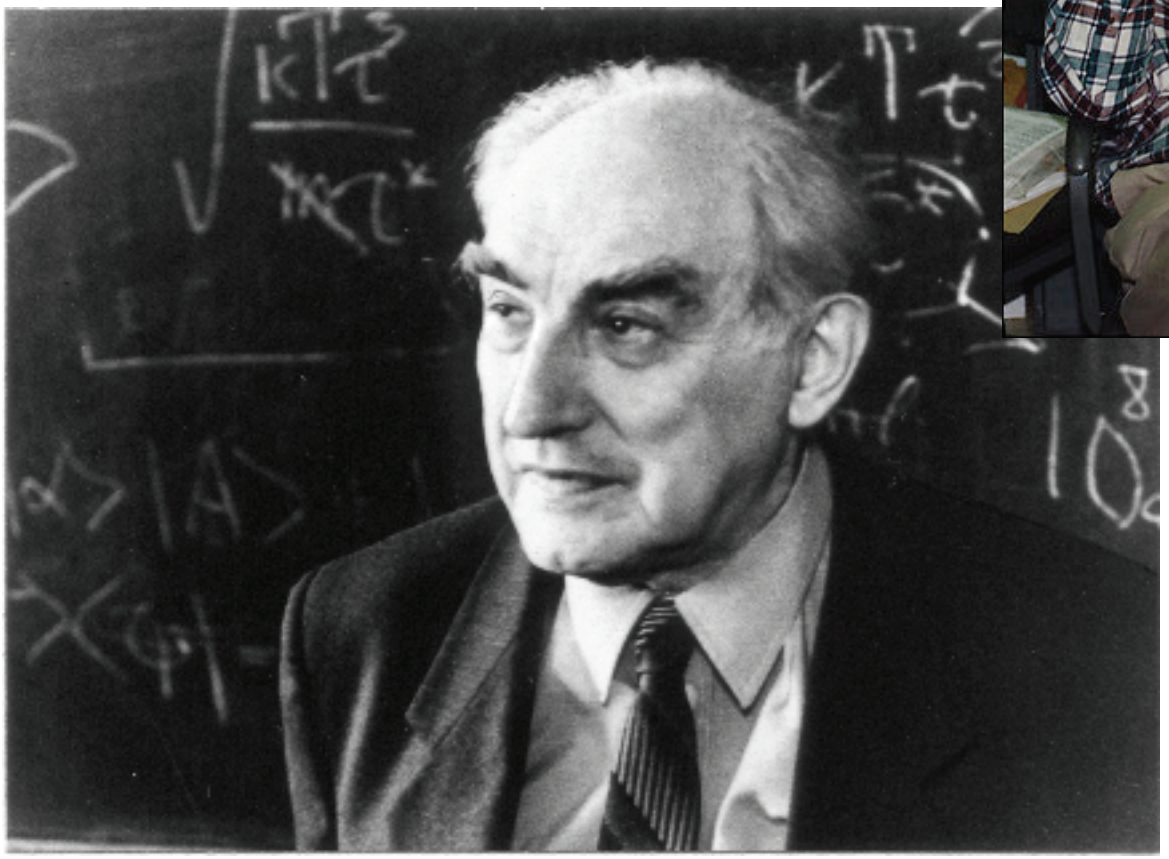
- Suzaku/XIS: ~ 2×10^{-3}
  (Yamaguich et al. 2006)

Engineering Model

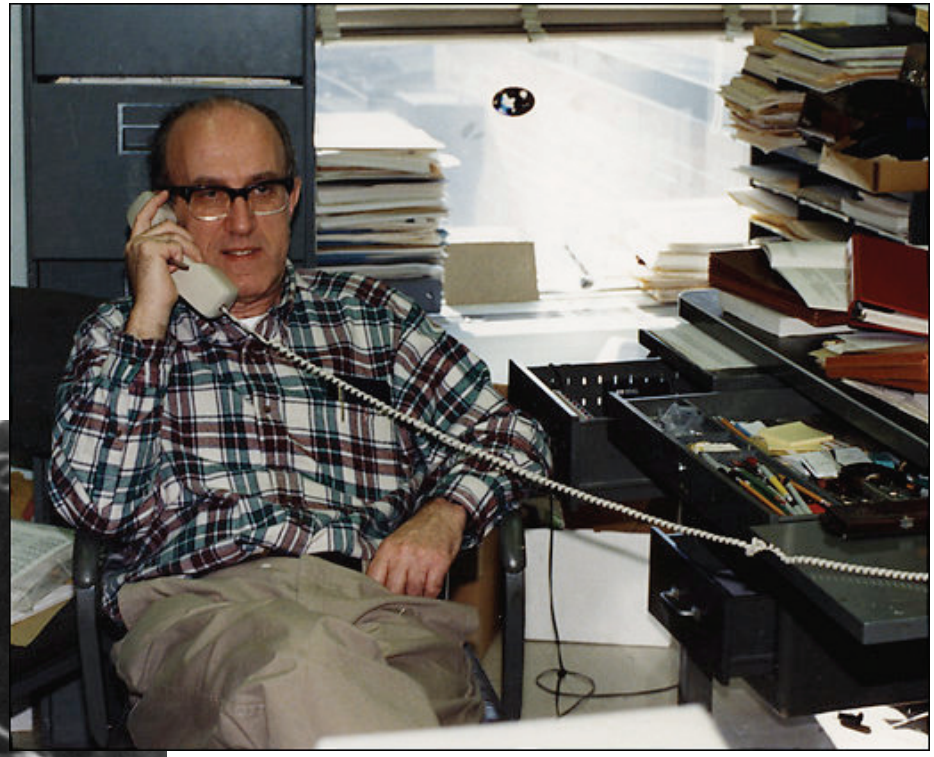


DETECTOR GRID CONNECTIONS



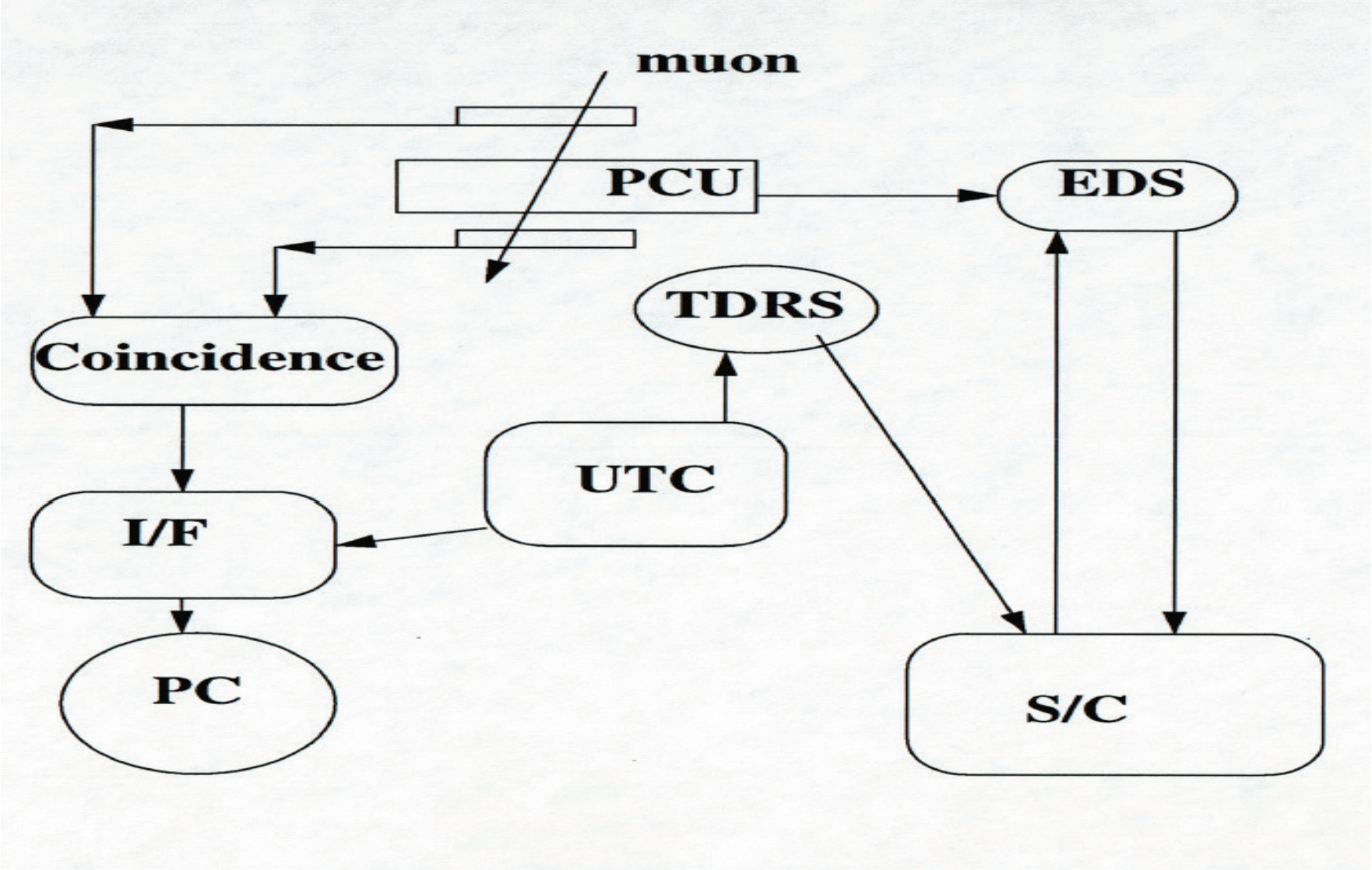


Vitaly Ginzburg
(1916-2009)



Elihu Boldt
(1931-2008)

How the RXTE S/C Clock Setting Was Verified



Verification of RXTE Event Time Tags

Table 1: The four columns in the table are defined as follows. Data Set: data set identification as designated by the timing GSE. UTCF(S/C): the clock offset factor as determined by the spacecraft. UTCF(S/C): the clock offset obtained by comparing the times of the coincidental events as tagged by the timing GSE. Difference: the difference between the two UTCFs which is the time caused either by clock drift or seomthing else which at this moment is unaccounted for.

Data Set (date)	UTCF(S/C) (μs)	UTCF(GSE) (μs)	Difference (μs)
04061926.6CH	1,440,920	1,440,926	6
04071902.6CH	1,781,210	1,781,219	9
04081955.6CH	822,990	822,992	2
04111947.6CH	1,906,117	1,906,120	3
04121909.6CH	1,341,032	1,341,034	2

Astronomy and Astrophysics for the 1980's (1982)

- IRAS ….
- COBE …..
- EUVE ……
- XTE The X-Ray Timing Explorer (XTE) will provide important new opportunities for observations of variability in x-ray sources on time scales ranging from milliseconds to years. The scientific objectives of this mission include investigations of the mass, magnetic moment, and internal structure of neutron stars and degenerate dwarfs; the physics of accretion disks, plasmas, and stellar magnetospheres; the geometry of source emission regions; the nature and evolution of normal stars, through studies of mass loss; the nature of variable sources, such as x-ray bursters and transient x-ray sources; and the underlying physics and emission mechanisms in compact extragalactic objects.

New Worlds, New Horizons in Astronomy and Astrophysics (2010)

- WFIRST
- Explorer Program
- LISA
- IXO is a versatile, large-area, high-spectral-resolution X-ray telescope that will make great advances on broad fronts ranging from characterization of black holes to elucidation of cosmology and the life cycles of matter and energy in the cosmos. Central to many of the science questions identified by this survey, IXO will revolutionize high-energy astrophysics with more than an-order-of-magnitude improvement in capabilities.

Prediction: IXO or something like it will be launched in ~2025!