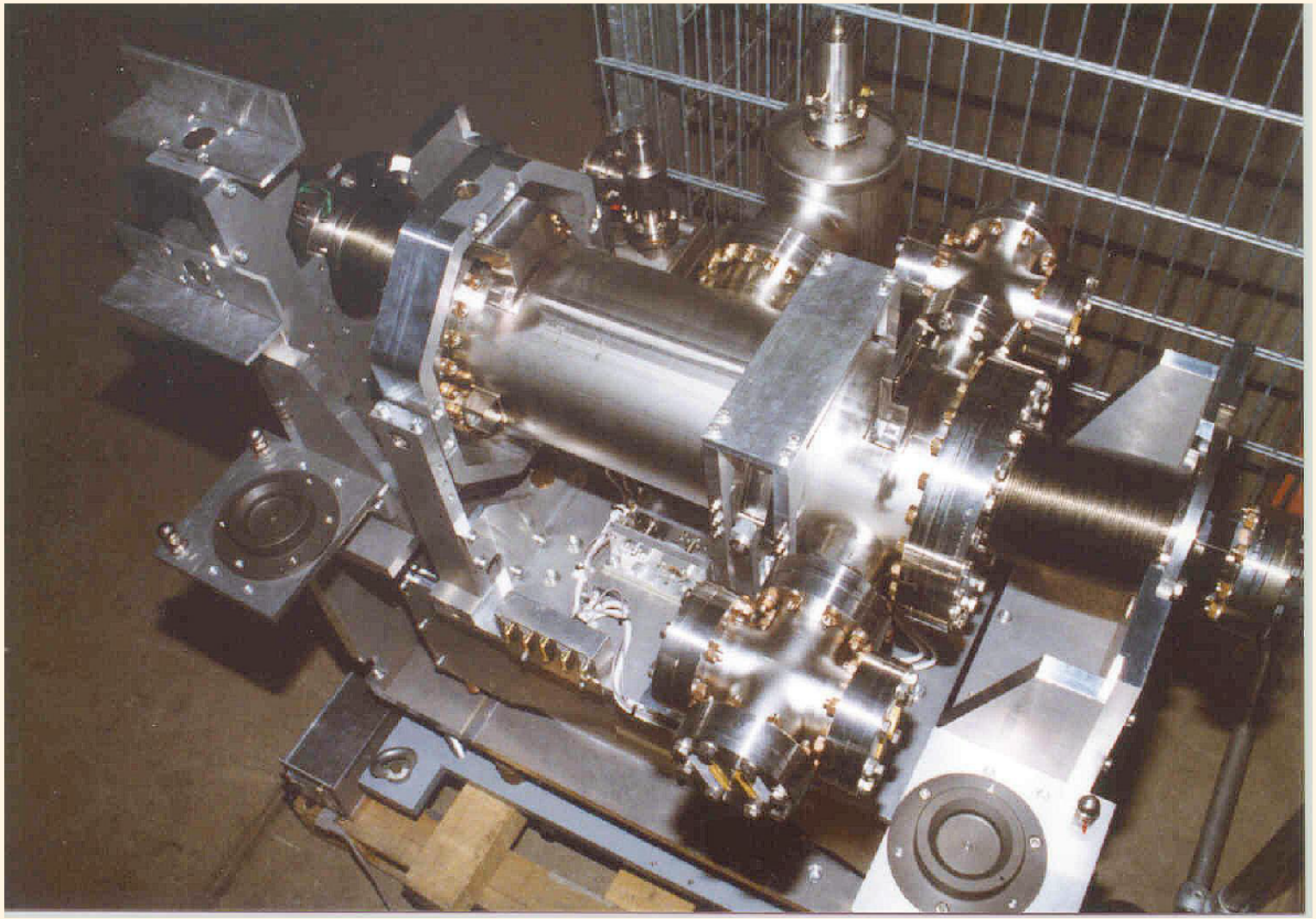
The Beam Trajectory Monitor

Top View



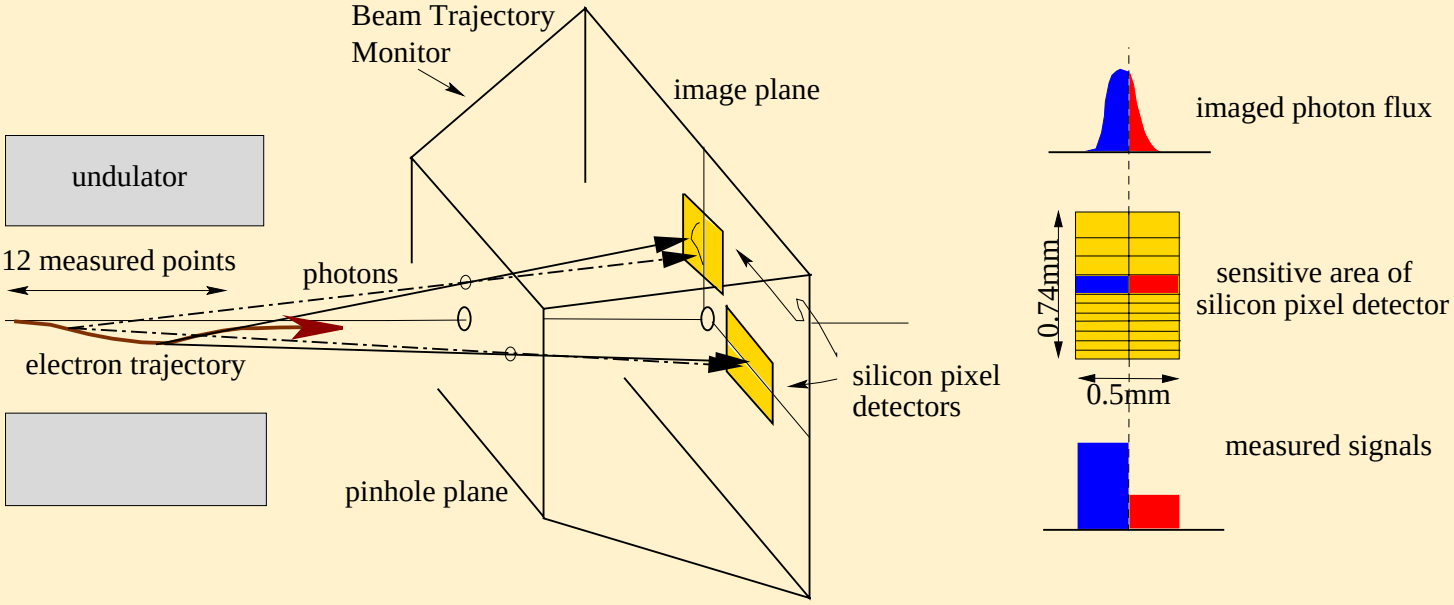
TTF Meeting in Frascati

Beam Trajectory Monitor

- Principle of Operation
- Experimental Setup
- Simulations
- Measurements
- Results
- Problems
- Next Steps

The Beam Trajectory Monitor

Principle of Operation



- Measure the complete trajectory on one detector chip

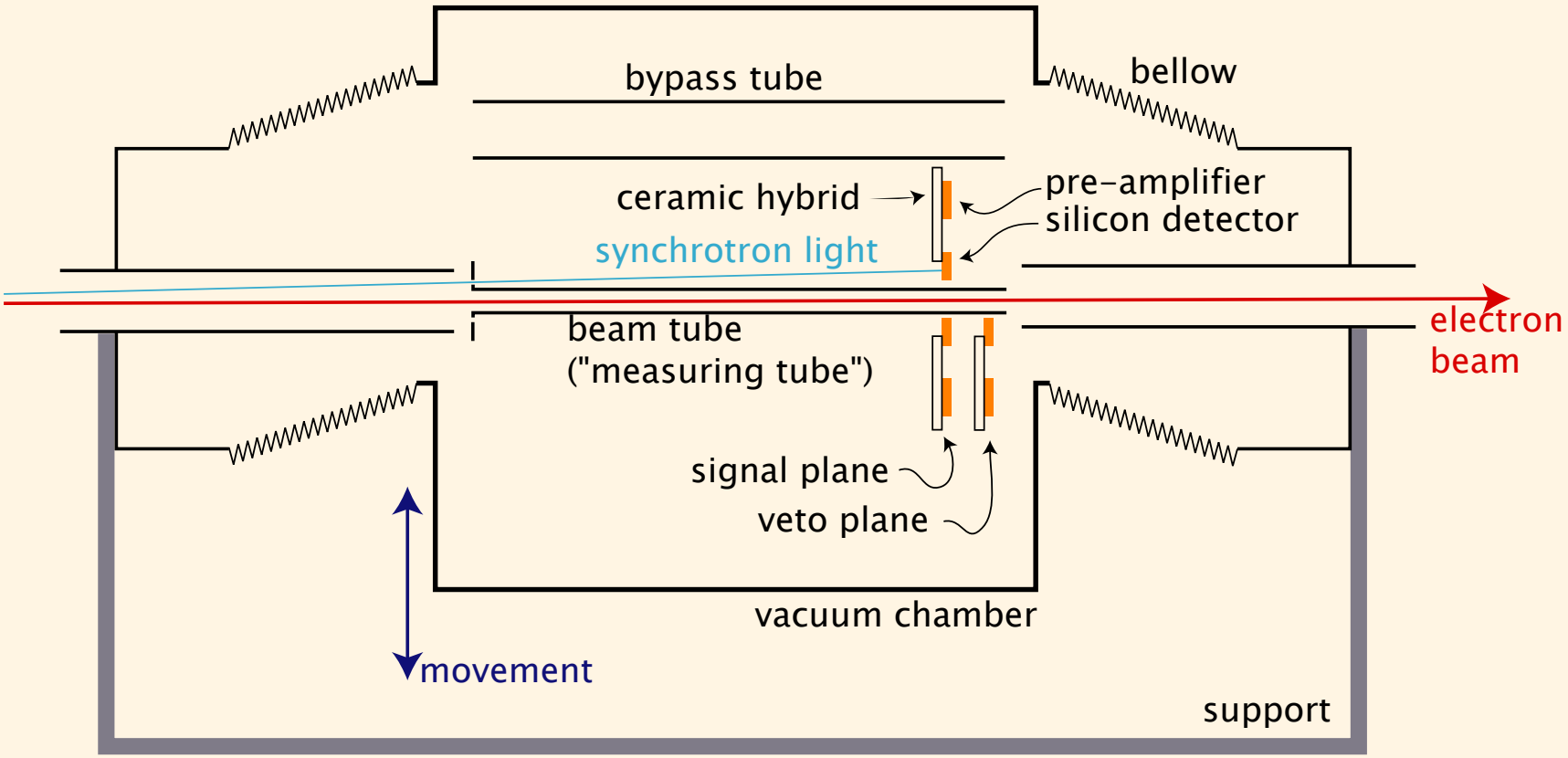
⇨ No beam based alignment necessary

BTM BEAM TRAJECTORY MONITOR

www.desy.de/~rasmus/ttf/btm

The Beam Trajectory Monitor

Schematic Drawing



The Beam Trajectory Monitor

Setup

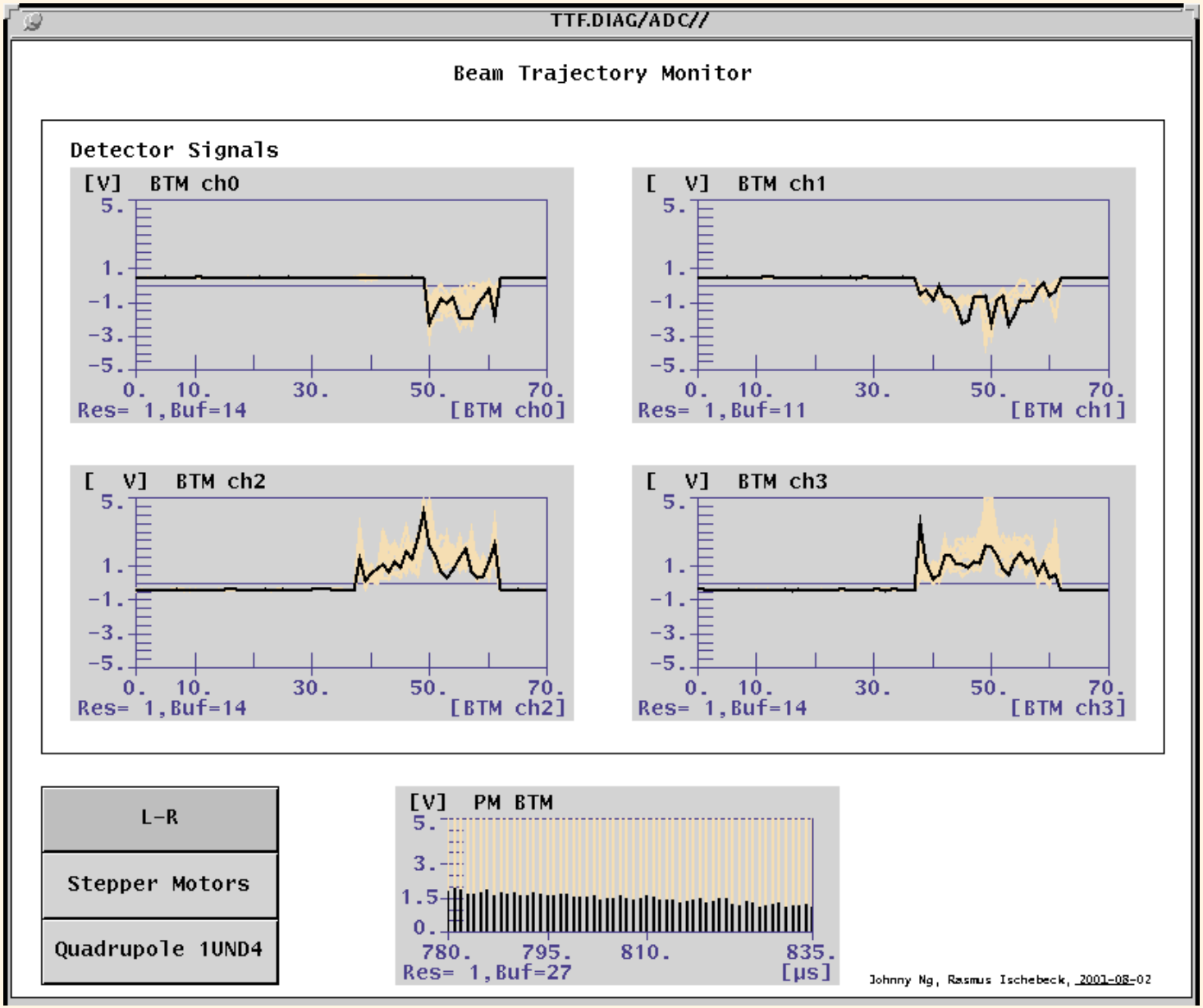
- All in vacuum because of VUV light
- Central cylinder
  - holds pinholes and detectors
- Vacuum chamber
- Motion system
- Pinholes and photon filters
- Semiconductor detector
- Front end electronics
- Infrastructure

BEAM TRAJECTORY MONITOR

www.desy.de/
~rasmus/ttf/btm

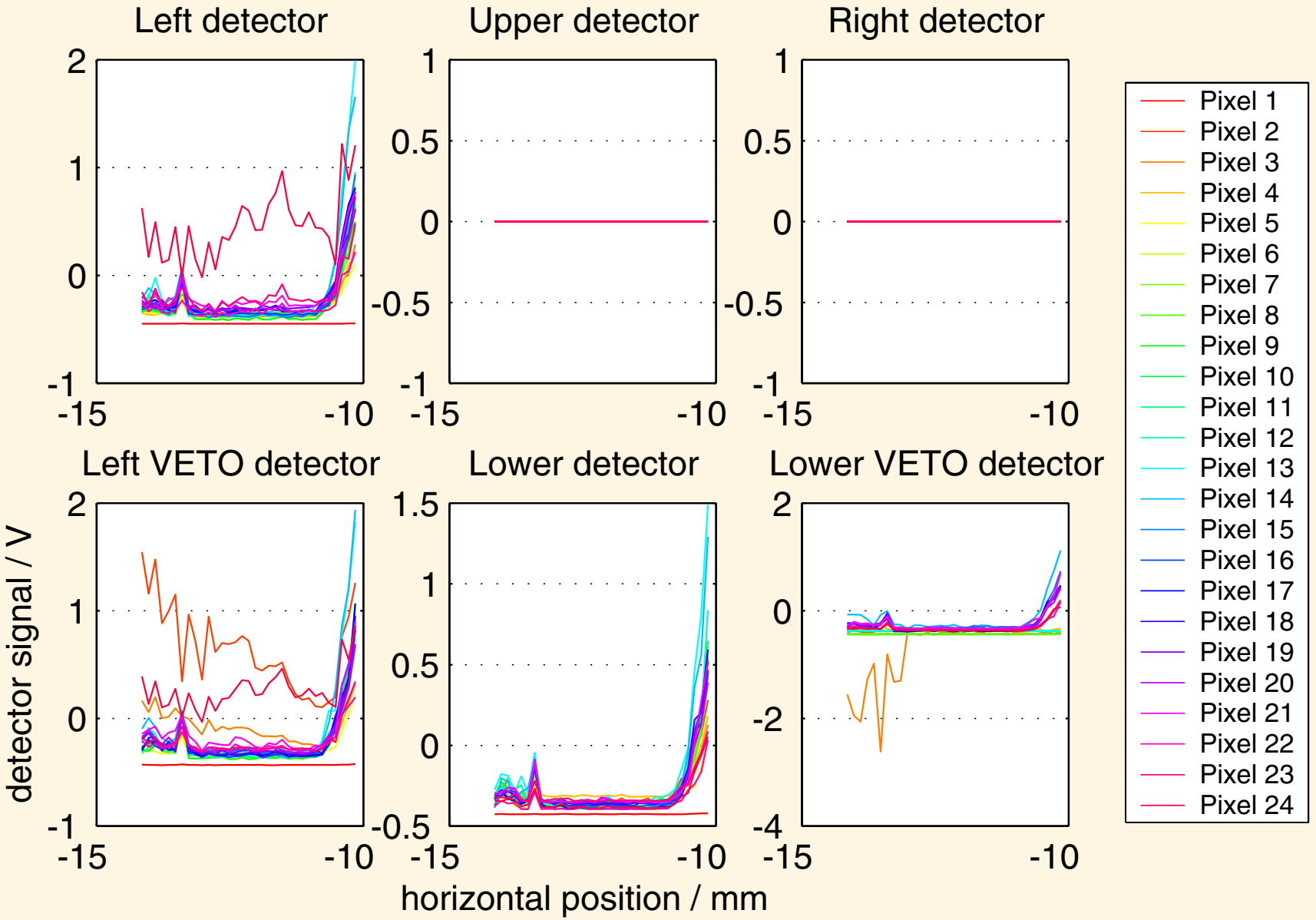
BTM installation in the TTF

First Signals



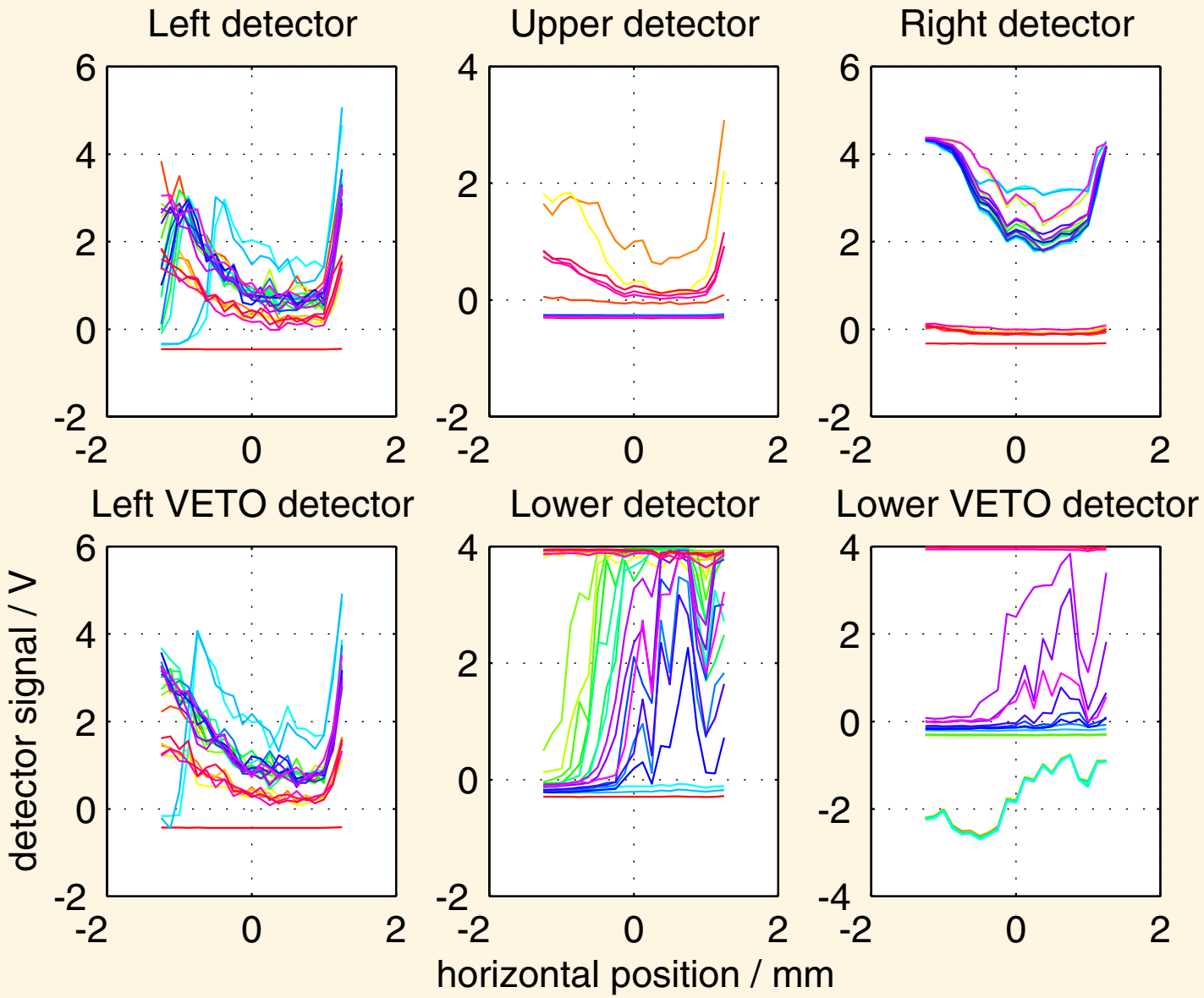
Measurements

Scan around bypass tube



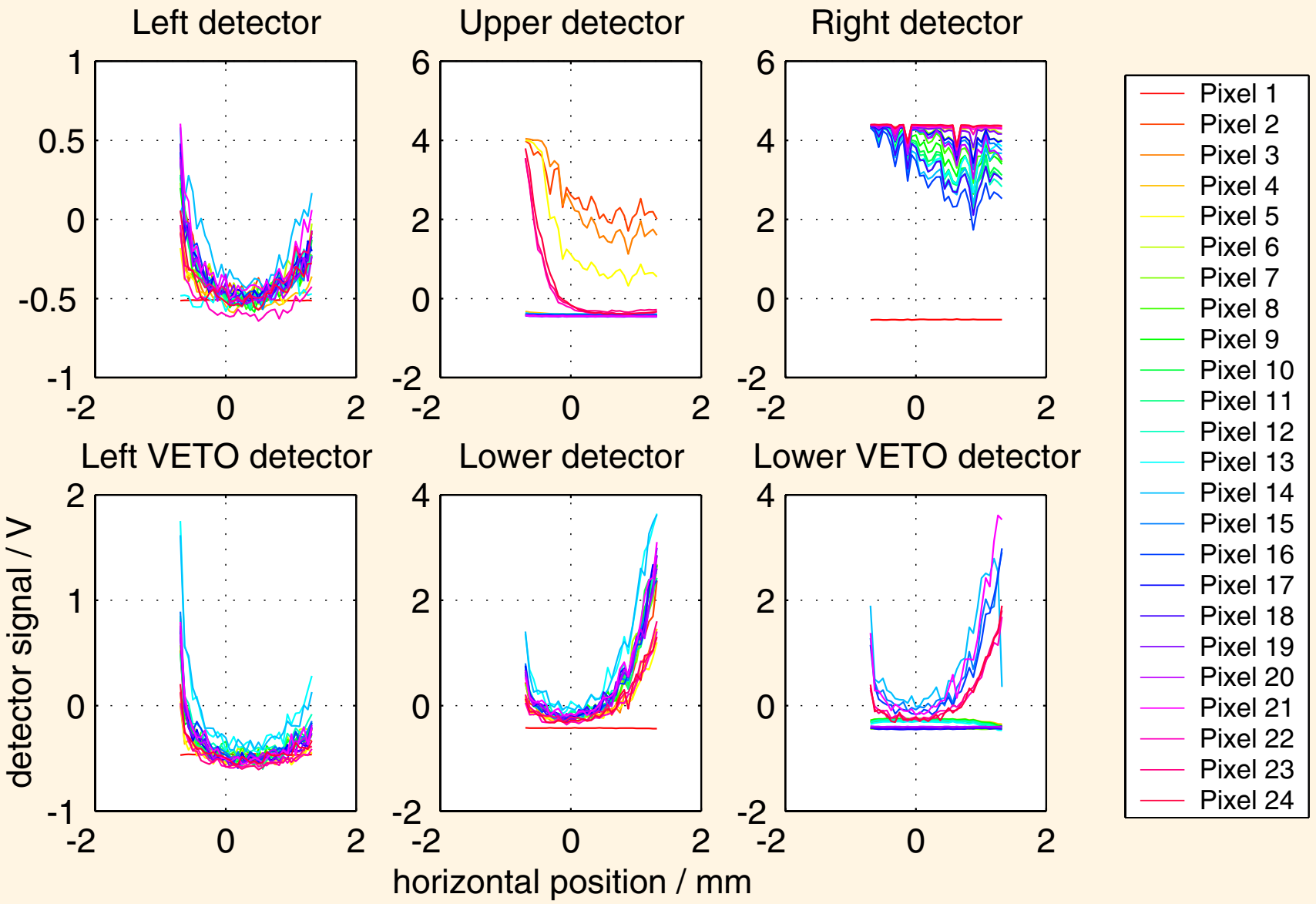
Measurements

Scan around measuring tube



Search for Synchrotron Light

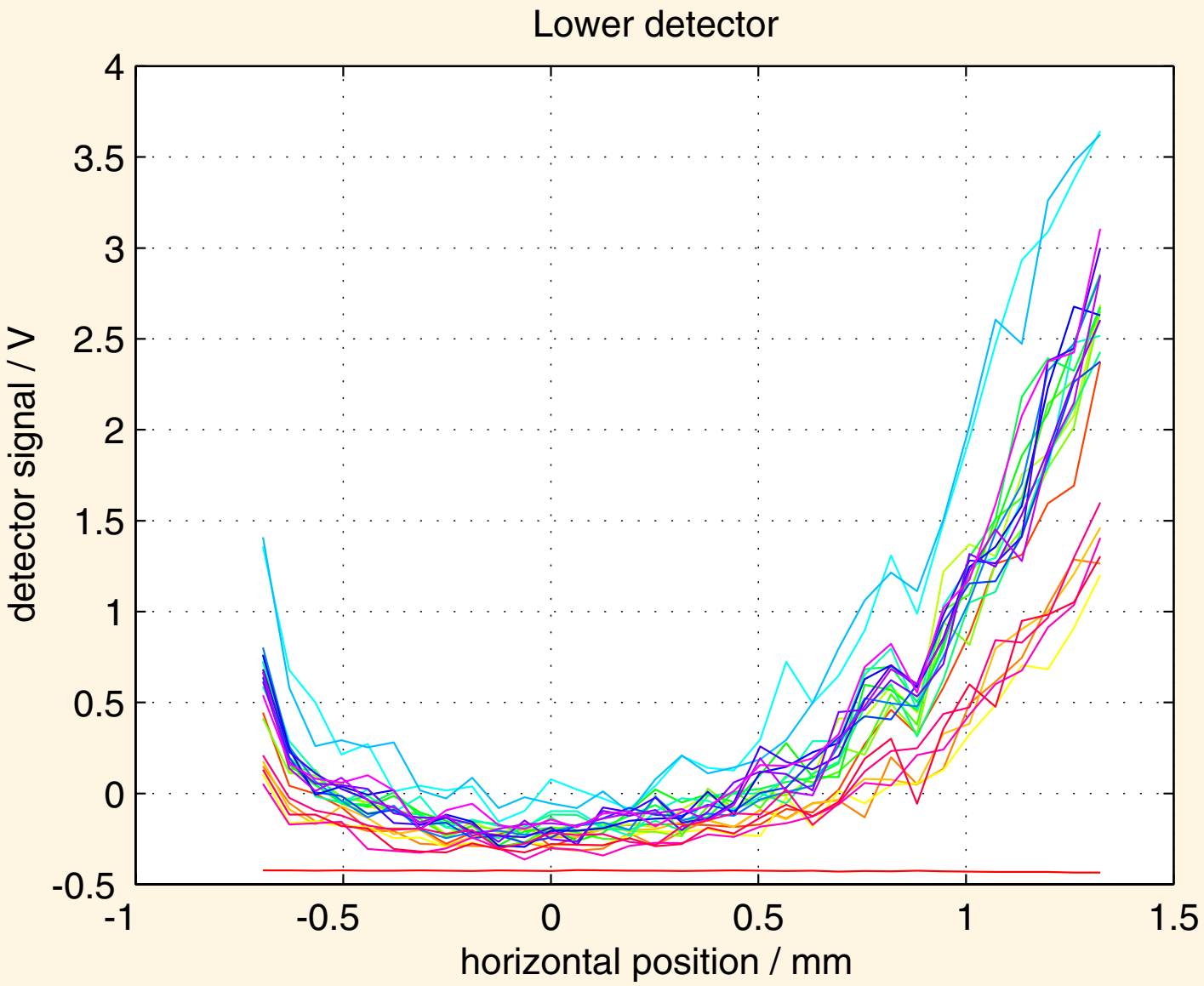
Variation of Detector Position



BTM BEAM TRAJECTORY MONITOR

Search for Synchrotron Light

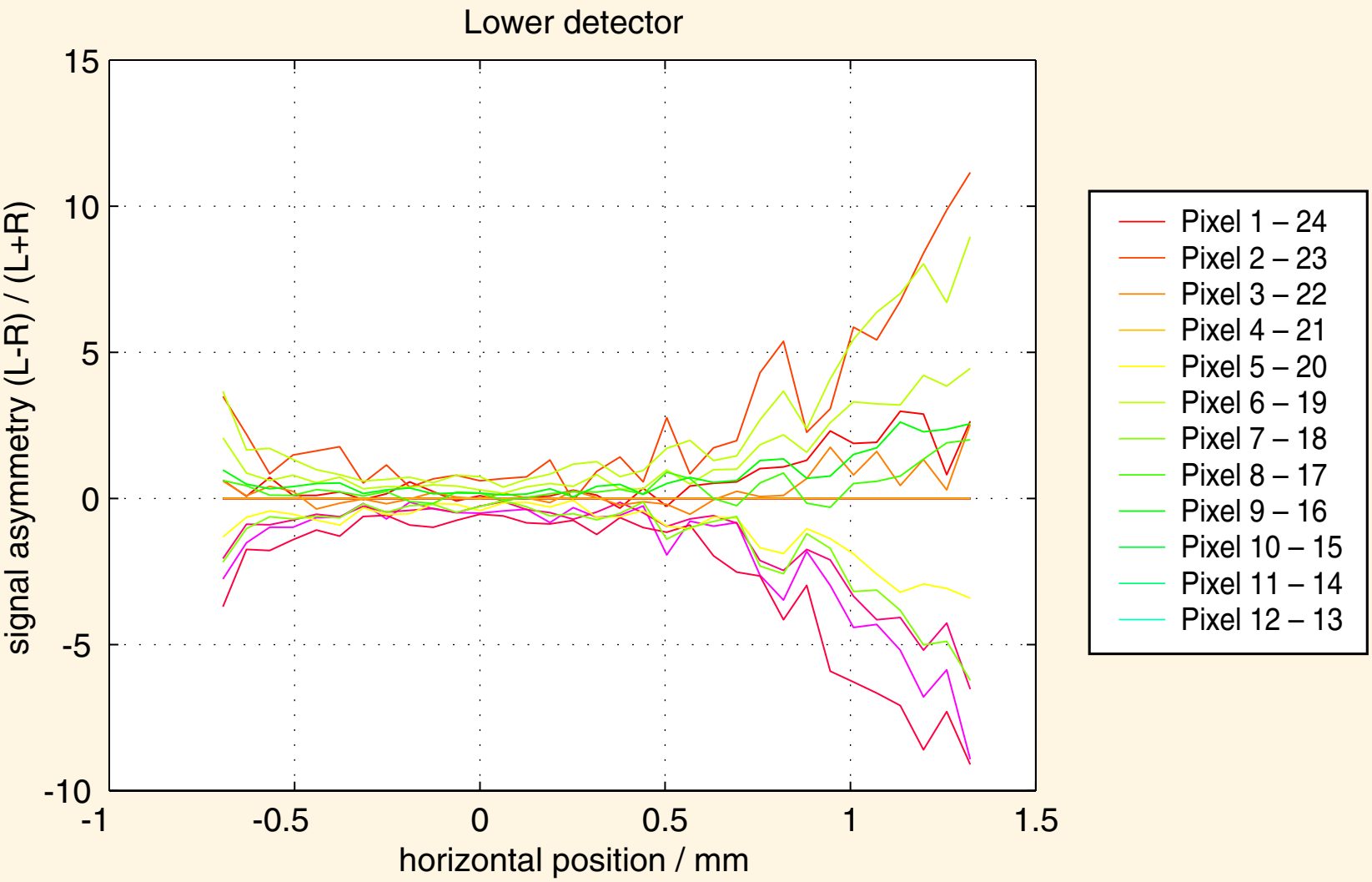
Variation of Detector Position



BTM
BEAM TRAJECTORY MONITOR

Search for Synchrotron Light

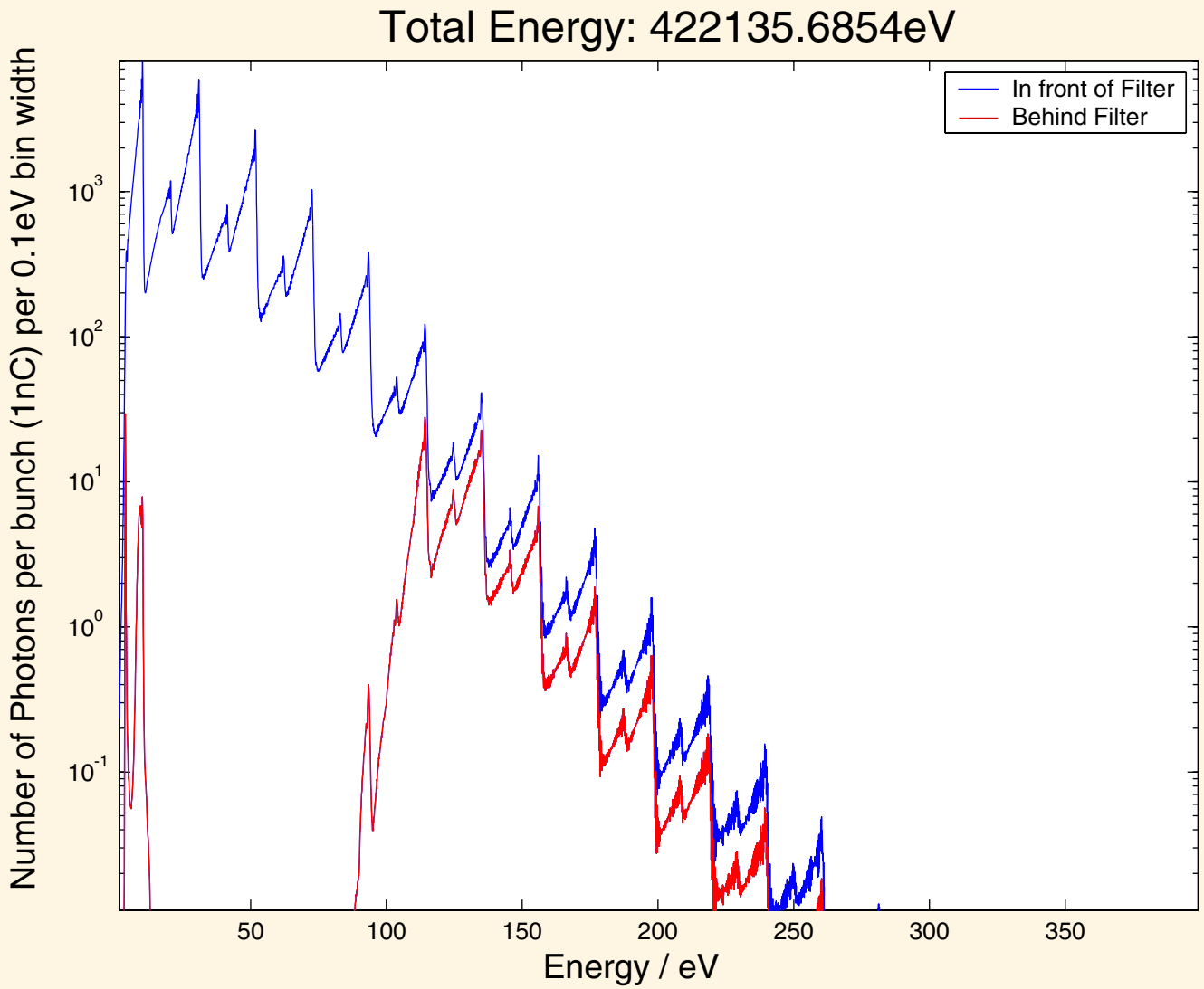
Signal Asymmetry



BTM
BEAM TRAJECTORY MONITOR

Simulations

Energy Spectrum at Aperture



BTM Operation with TTF beam

Solved Problems

- Achieved good transmission
- Found (and fixed) loose end switch

Unsolved Problems

- Beam Tube in front of BTM
- Guard Ring
- Understand Signals
  - Correlations between Pixels
  - Variation of BTM position
  - Dependence on accelerator parameters
- Track simulated energy distribution through aperture