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# Tango status at Elettra

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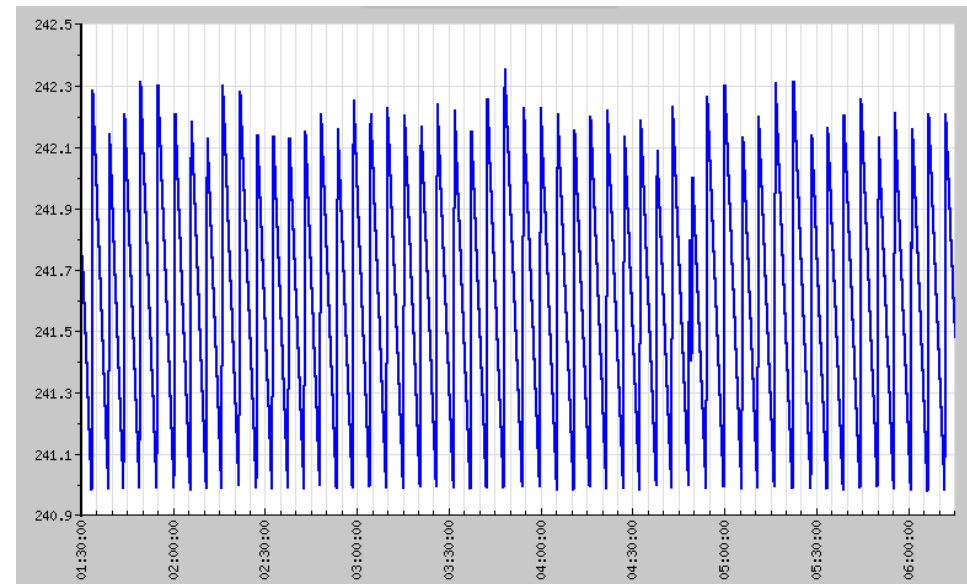
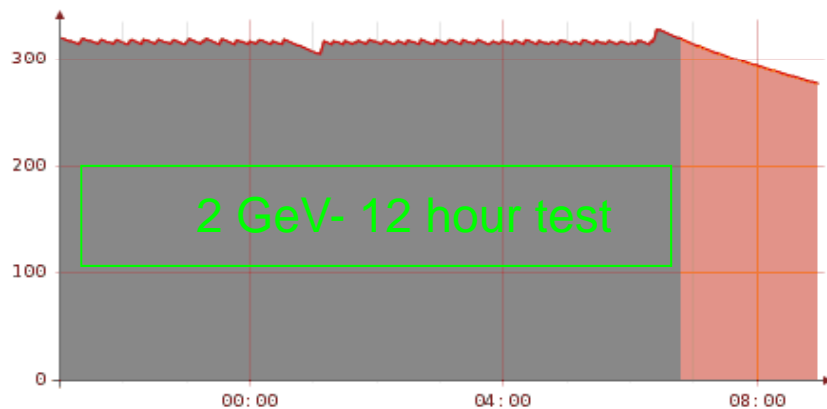
Storage Ring & Booster

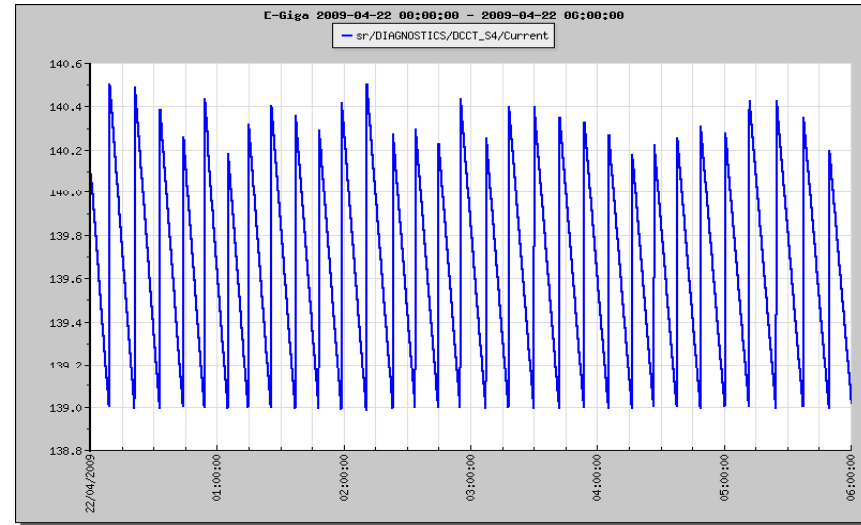
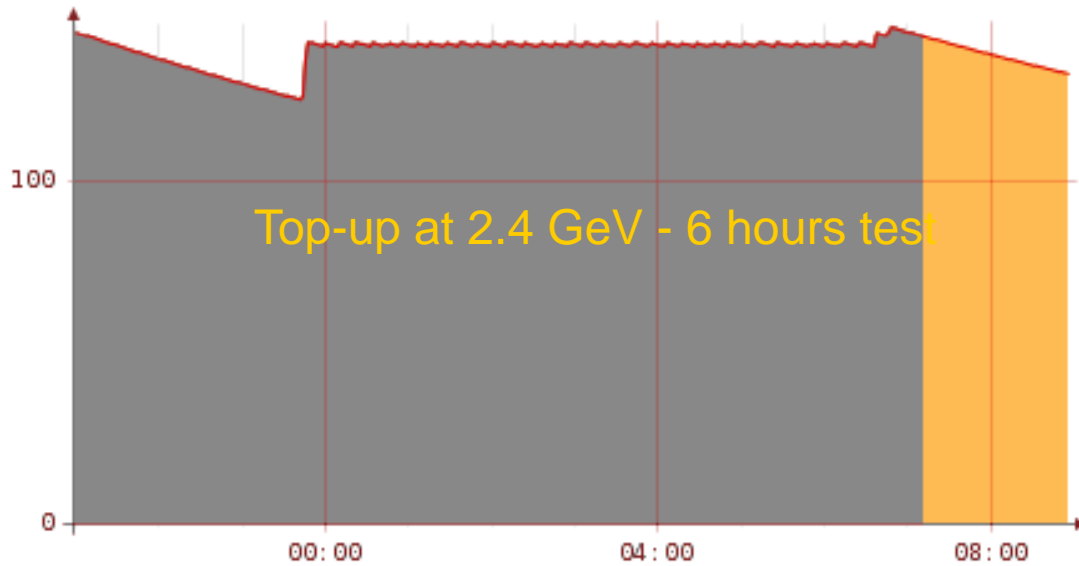
FERMI@Elettra

Status of Tango

- Reliable operations at all energies:
  - (0.9) 2.0 and 2.4 GeV
  - different filling patterns
- Working for top-up operations
  - Some instrumentations will be installed in June
  - Update of personnel safety and access control
  - Bucket-by-bucket charge control
  - Scheduled for end of 2009

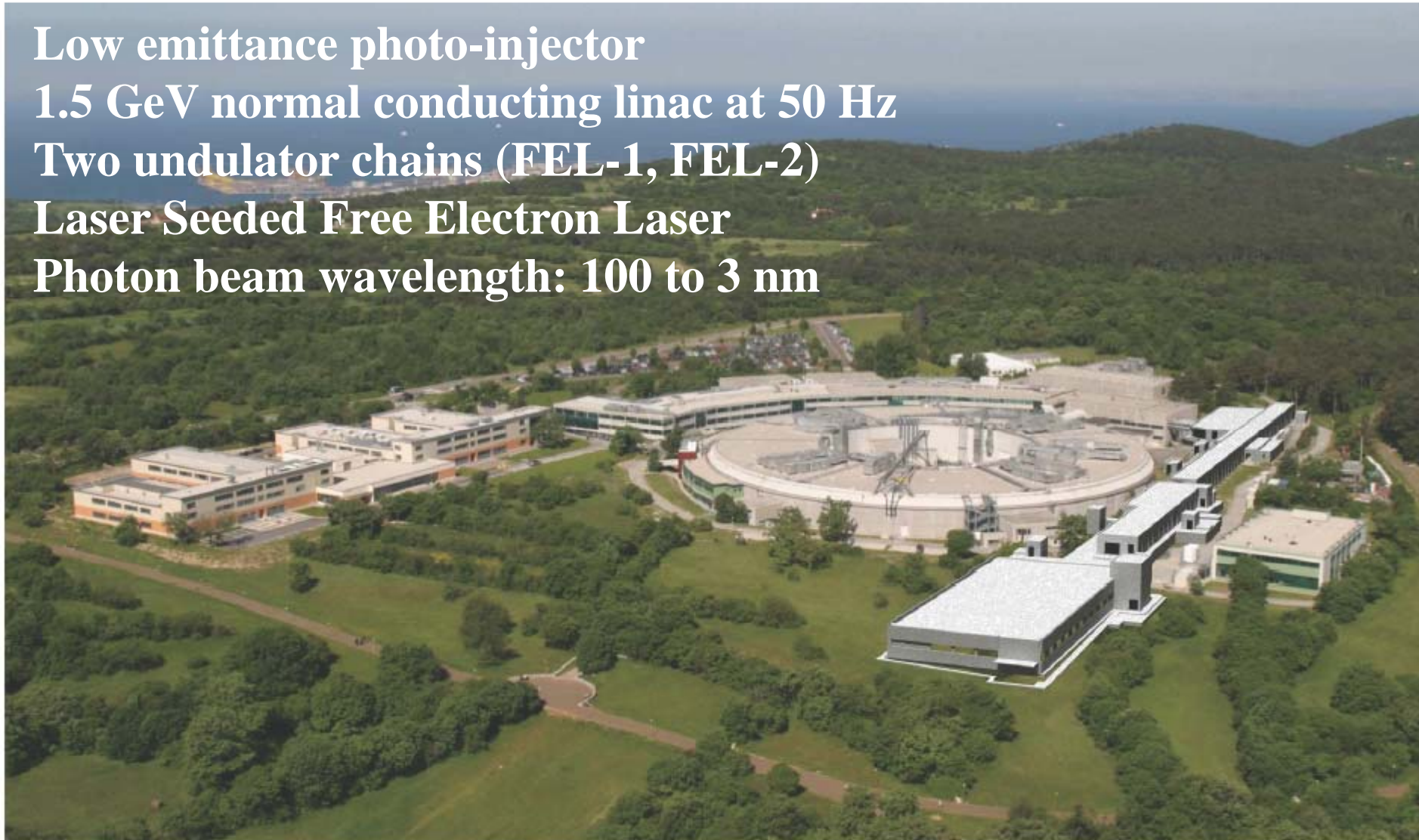
Confirmed that top up is possible at both energies, more critical at 2 GeV. Series

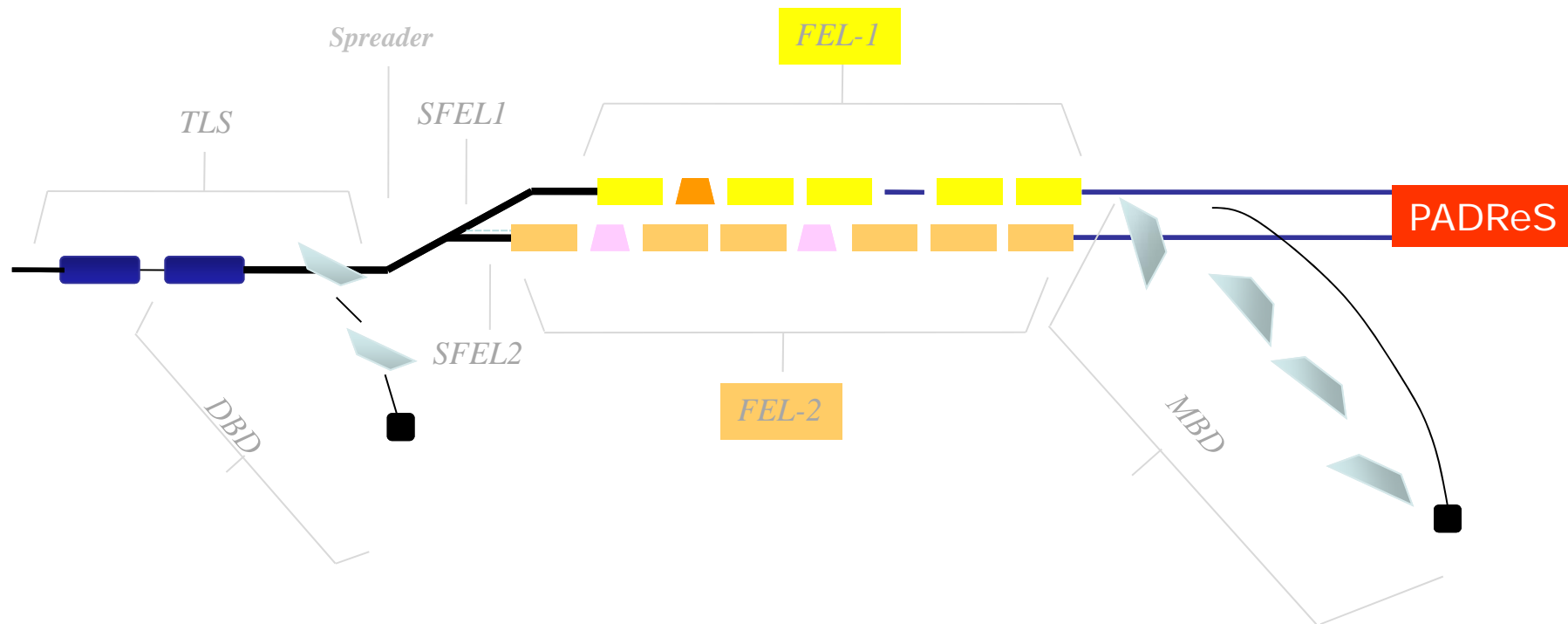
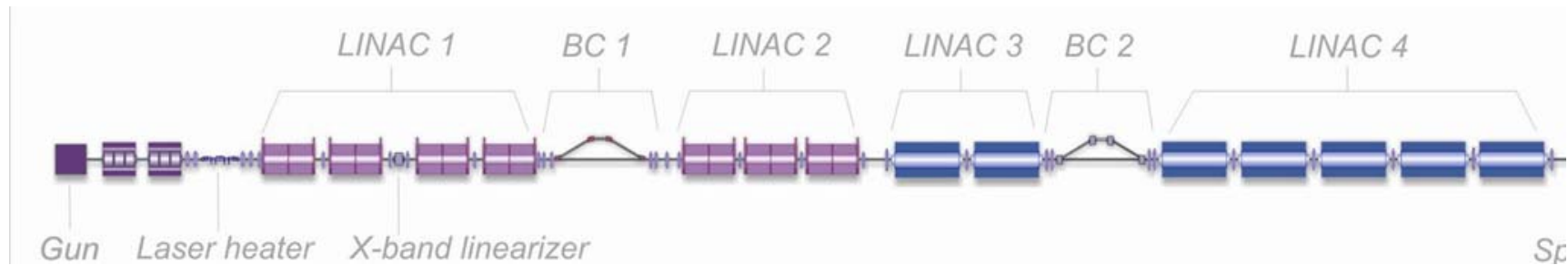




Injecting every 10 min 1mA with about 20 pulses (about 10 sec) Intensity homogeneity about 60% but

Low emittance photo-injector  
1.5 GeV normal conducting linac at 50 Hz  
Two undulator chains (FEL-1, FEL-2)  
Laser Seeded Free Electron Laser  
Photon beam wavelength: 100 to 3 nm







**Linac extension building**



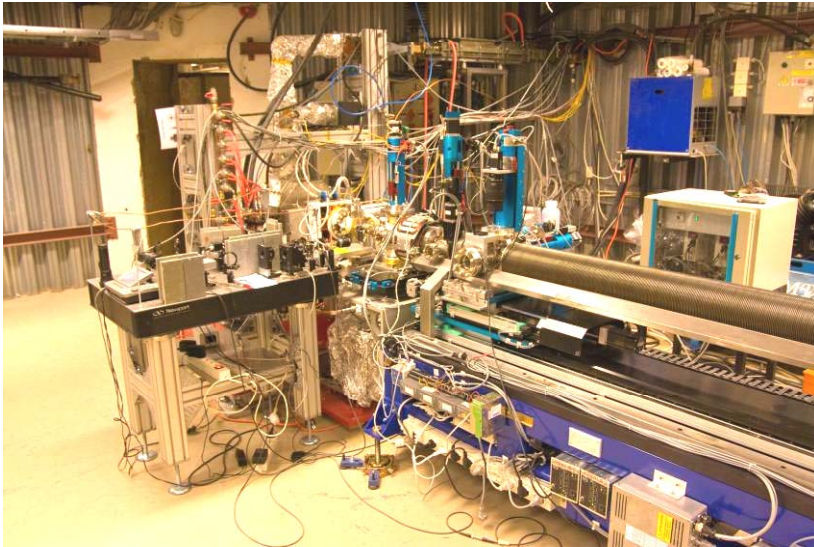
**Linac tunnel**



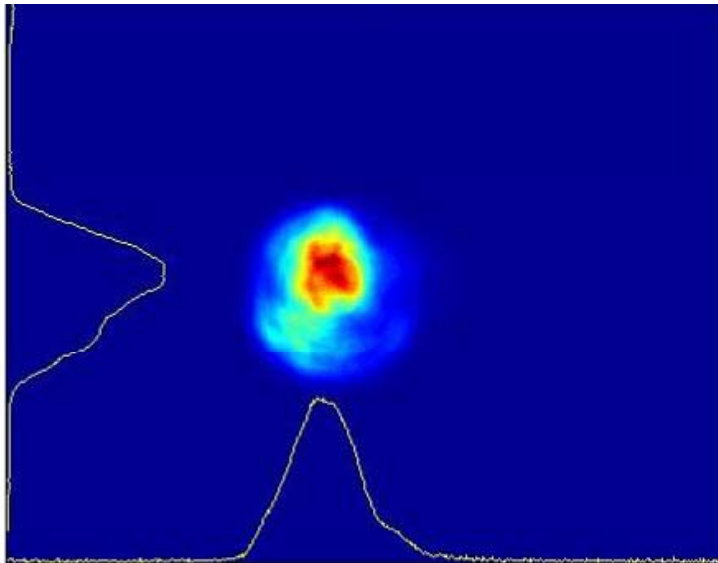
**Klystron Gallery**



**Undulator and experimental hall yard**



$Q_{\text{bunch}} = 200 \text{ pC}$   
Energy = 5.2 MeV (115 MV/m)  
Emittance<sub>y</sub> (@1500mm) = 2.2 mm  
mrad



A complete control system based on Tango has been implemented

## **STATUS:**

**started positioning of machine components and technical racks of the first part of the li**

## **COMMISSIONING SCHEDULE:**

**First phase (linac 230 MeV): 18<sup>th</sup> of August 2009**

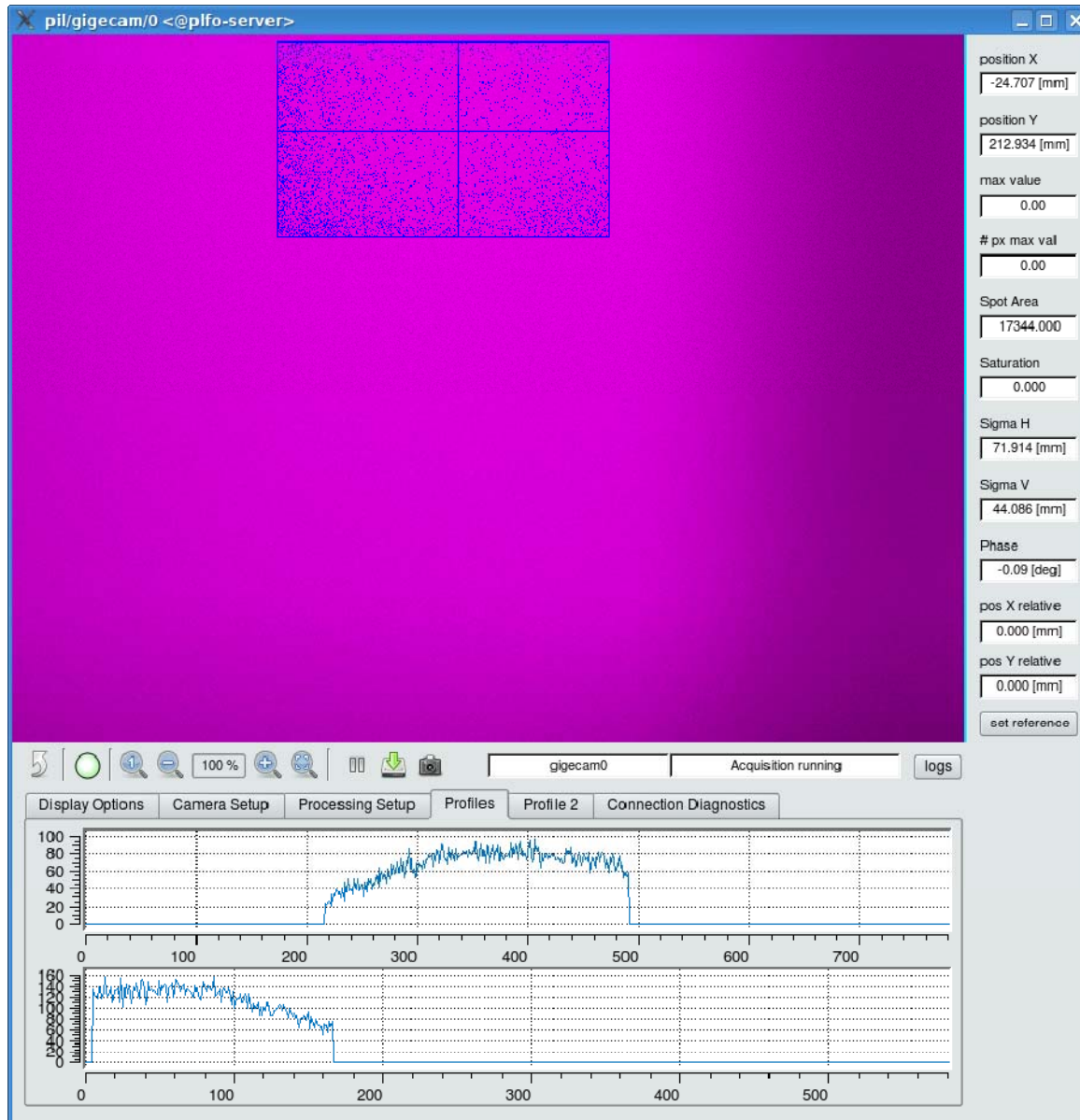
**Second phase (whole linac): June 2010**

**Third phase (transfer line and spreader): August 2010**

**Fourth phase (FEL-1): October 2010**

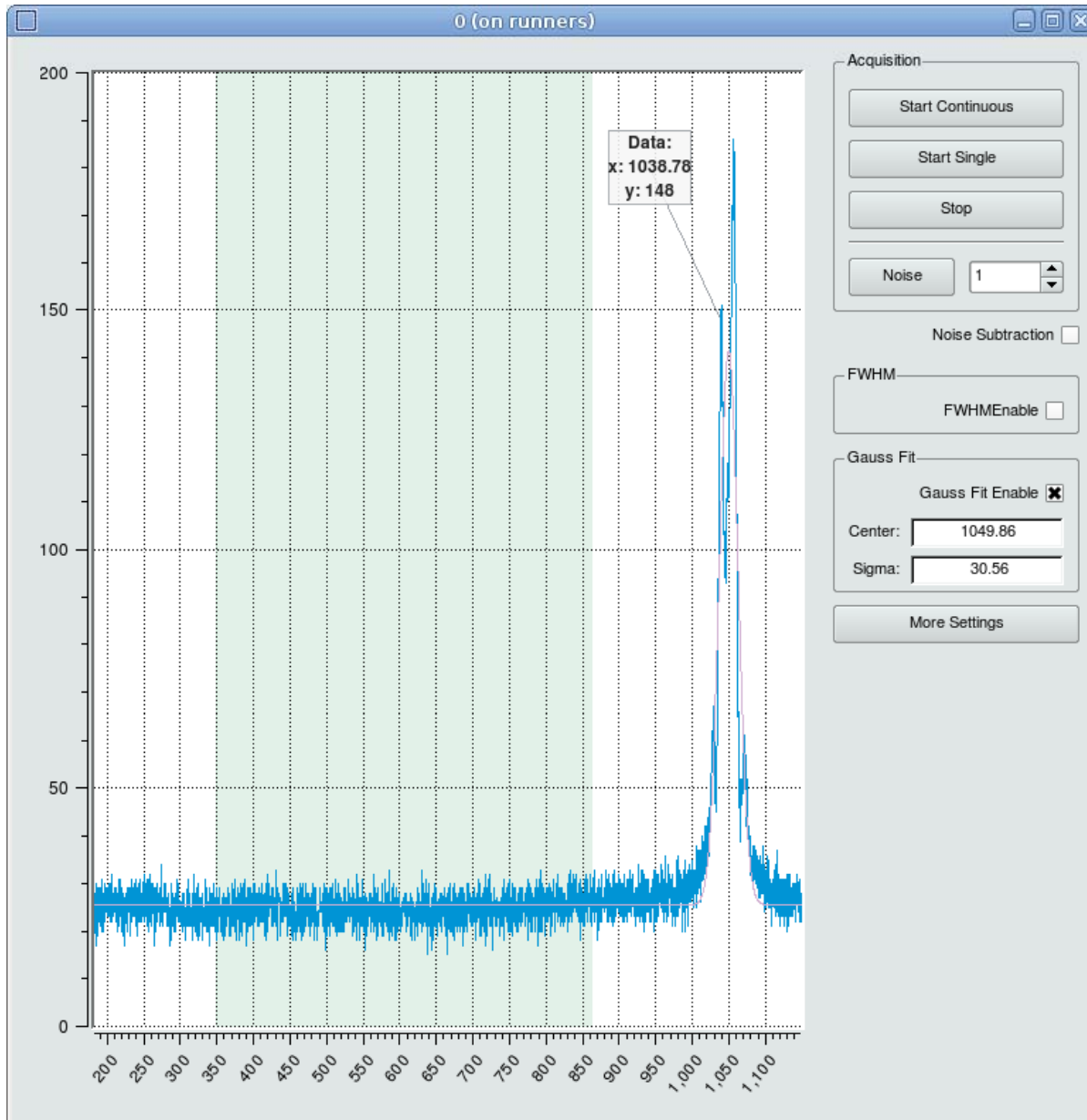
**Operations: January 2011**

- more than 40 Tango devices developed (May 2009) for
- tango 6.1.1.b -> tango7.0.2 asap
- reuse many of the booster Devices:
  - power supply
  - vacuum
  - interlock
  - klystron (with improvements)
- stable release of Qtango3 to be released soon



Basler CCD camera panel

Parameter calculations  
are done by Tango server



Laser spectrum analyzer

Panel developed with Qtango3  
components