

PeaPAC 2008

Posters in Pills

WEP006



BeamView – A Data Acquisition System for Optical Beam Instrumentation

GSI facility

previous system

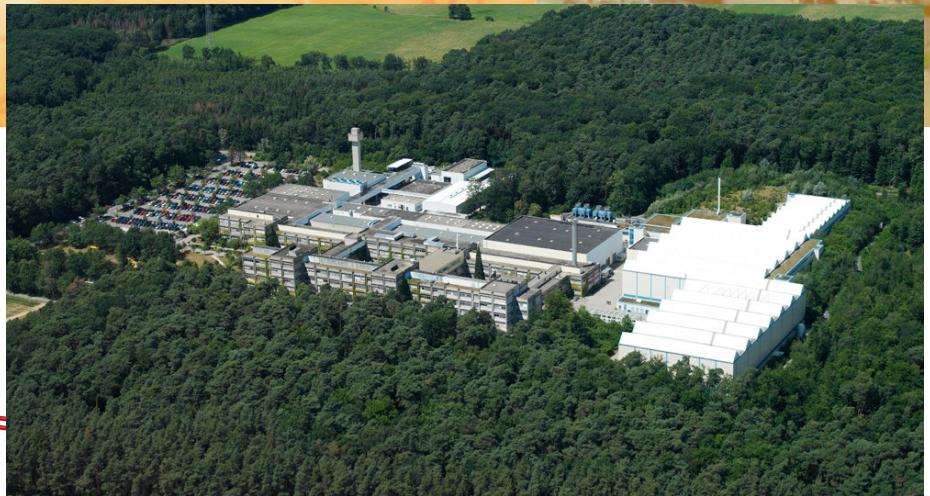
design of the new system 'BeamView'

user experience

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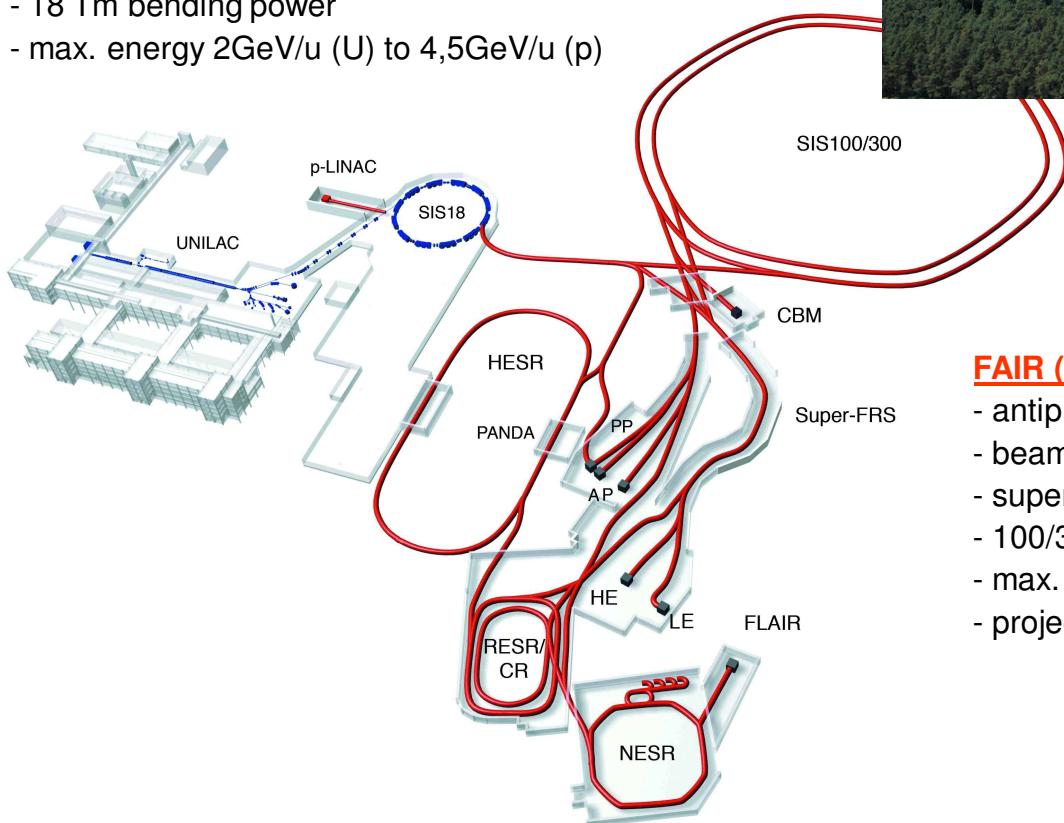


GSI facility



GSI today

- accelerate all elements up to uranium
- synchrotron 216m circumference
- 18 Tm bending power
- max. energy 2GeV/u (U) to 4,5GeV/u (p)



FAIR (Facility for Antiproton and Ion Research)

- antiprotons
- beams of exotic nuclei
- superconducting synchrotrons, 1100m circumference
- 100/300 Tm bending power
- max. energy 34GeV/u (U) to 29GeV/u (p)
- project started 2007, first experiments in 2014

Previous System



old system:

analog cameras with video multiplexers and TV screens

advantages:

cheap, simple and reliable



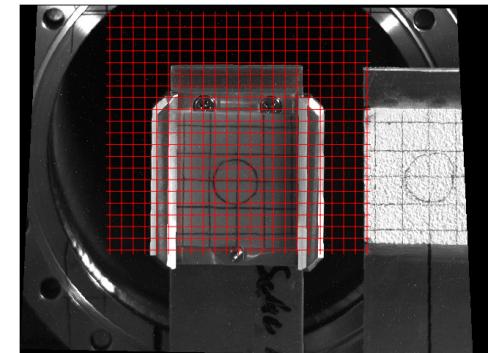
disadvantages:

no frame grabbers -> no storage, no analysis
no connection to machine timing
no exposition control

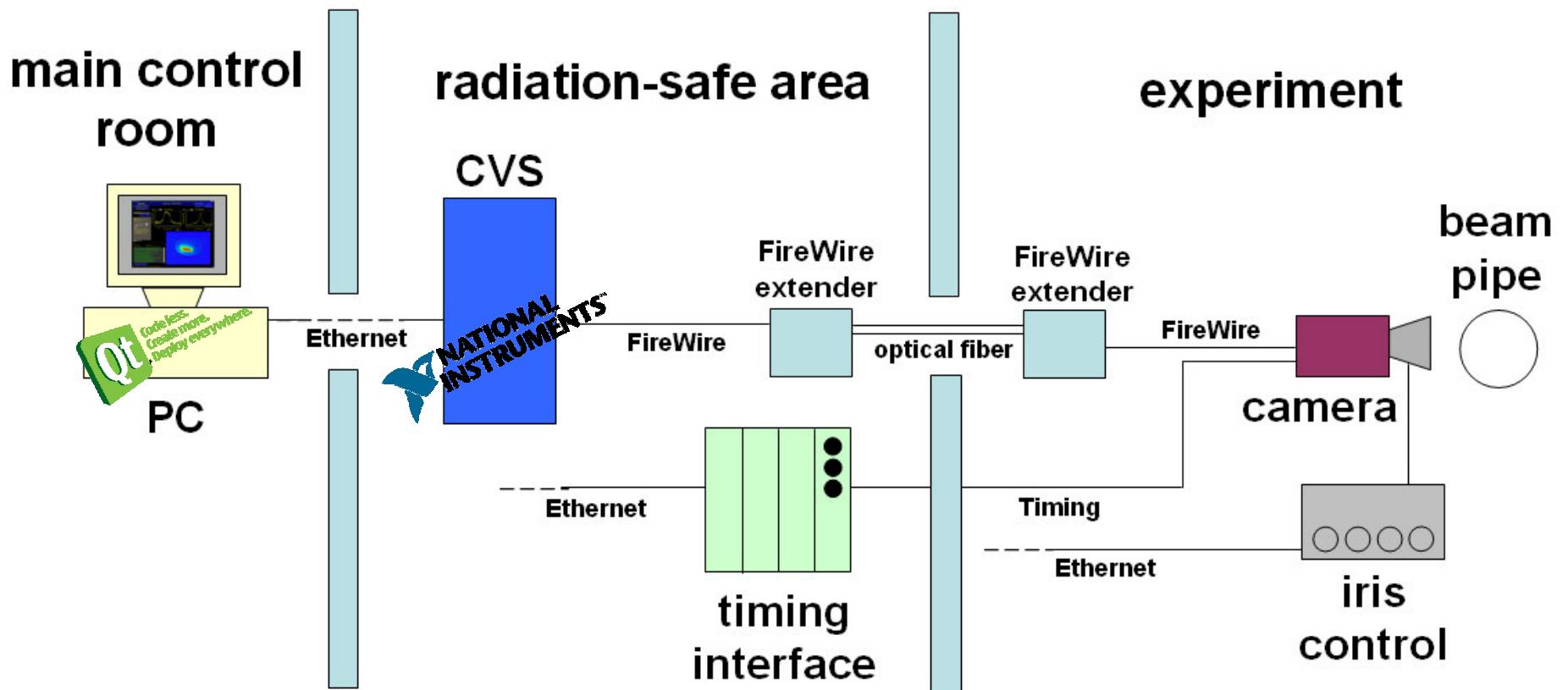


development of new system:

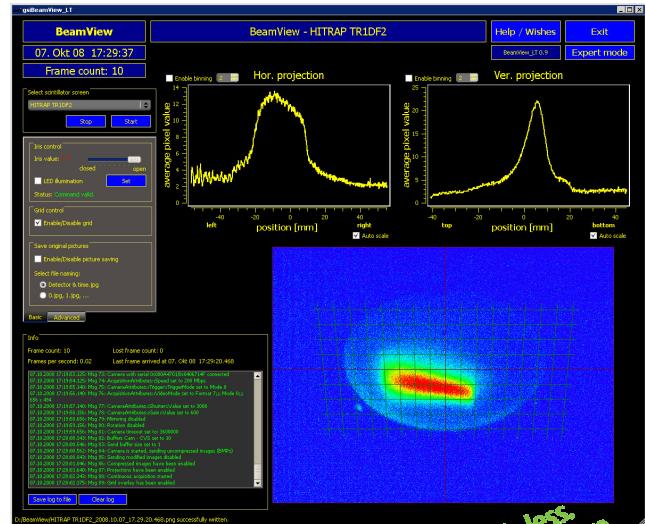
digital cameras
view and save pictures at screen of your choice
control camera parameters like gain, resolution,...
remote-controllable camera iris
trigger to machine events
fit into the existing IT infrastructure
standard hard- and software for later upgrades



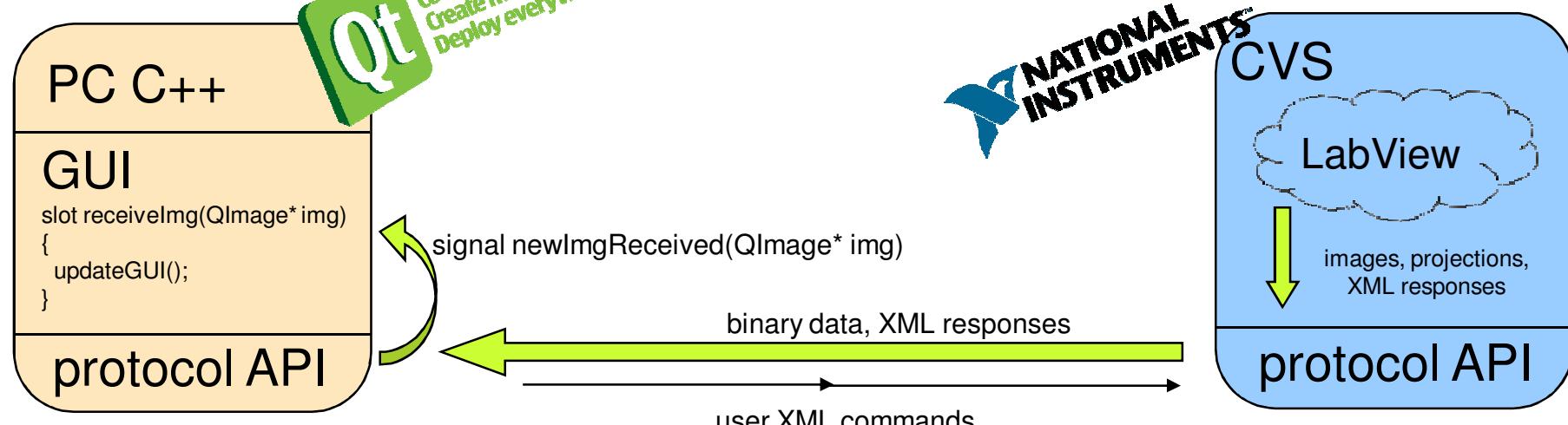
Design of 'BeamView' - Hardware



Design of 'BeamView' - Software

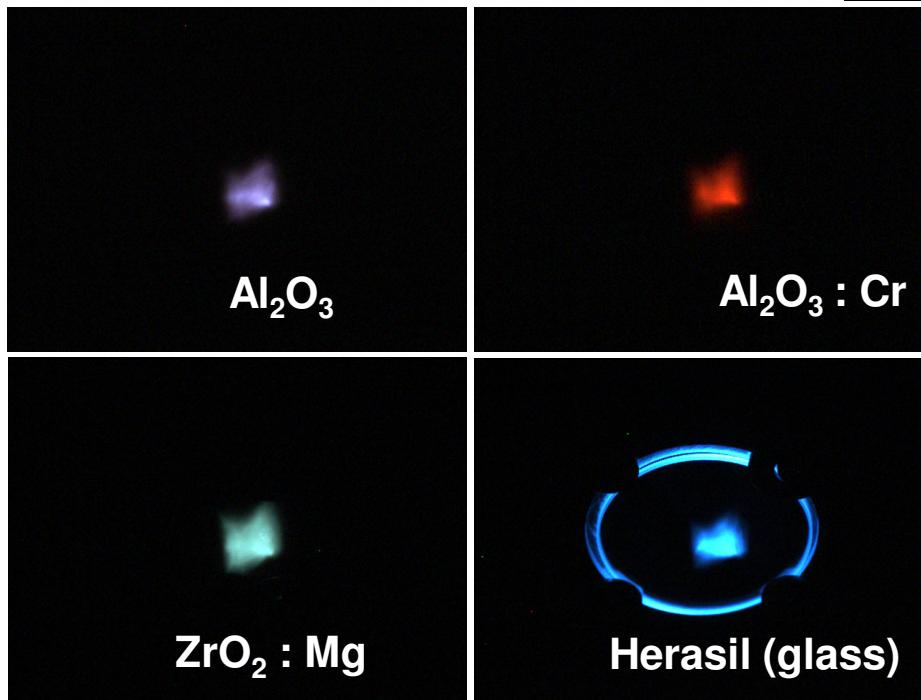
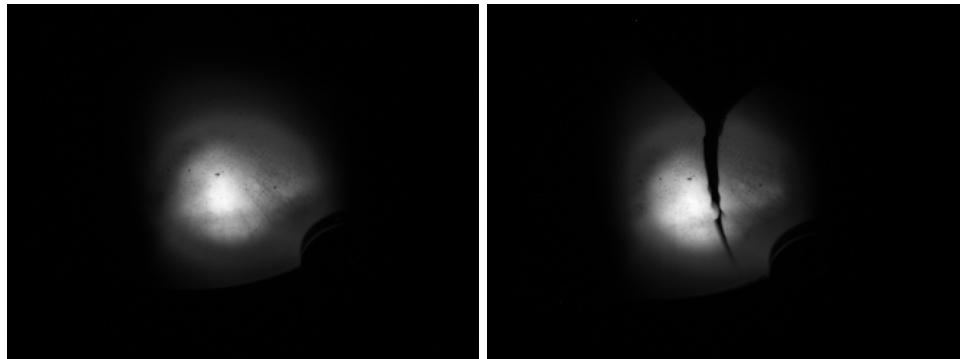


NI Compact Vision System 1456 (CVS)



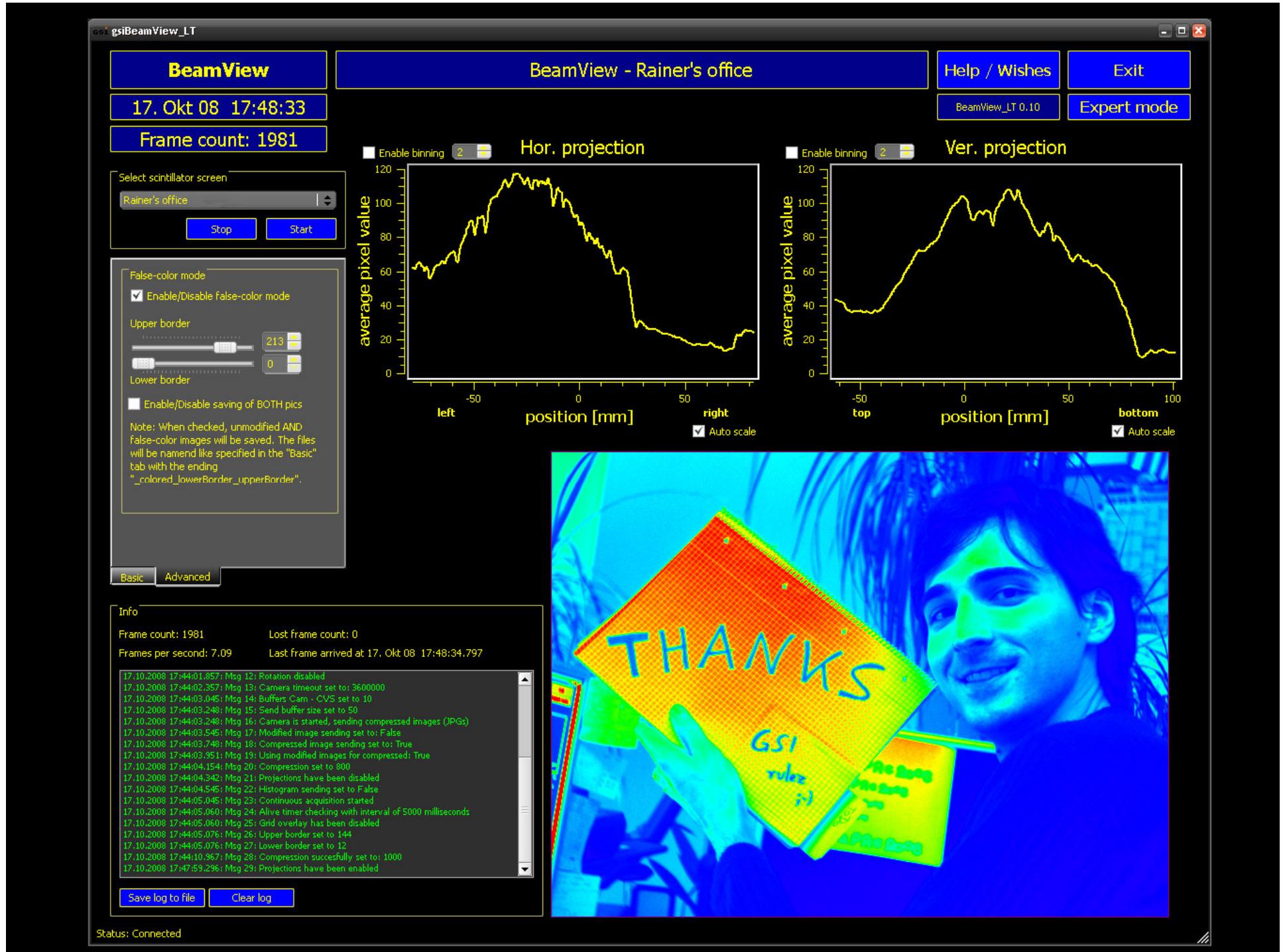
User Experience

ZrO₂ target break
100 pulses of ⁴⁰Ar¹⁰⁺ @ 11.4MeV/u,
~1.3mA, 1ms pulse length,
 1.6×10^{11} ppp



wavelength examination with
color camera by E.Gütlich Oct/2008

all samples irradiated by
⁶⁴Ni⁹⁺ @ 11.4MeV/u, ~12μA,
200μs pulse length, 2×10^9 ppp



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