



# SD Gruppenseminar

## BeamView und ProfileView

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## BeamView

- für Leuchttargets und Stripper ;-)
- Hard- und Software
- BeamView im Einsatz

## ProfileView

- für Gasfluoreszenz (BIF)
- Hard- und Software
- „Spezialitäten“ des Systems
- ProfileView im Einsatz

## Trivialitäten && Ausblick

Interessantes, Fehler, Kuriositäten

# BeamView

**BeamView 0.14** | BeamView | Help / Wishes | Exit

14. Aug 09 14:21:36 | Screenshot | Expert mode

Frame count: -

Select scintillator screen: [sdj05] | Stop | Start

Ins control: Ins value: 5.6 | closed | open | LED illumination: [ ] | Set

Status:

Grid control: [ ] Enable/Disable grid

Save original pictures: [ ] Enable/Disable picture saving

Select file naming: [ ] Detector & time .log | [ ] 0, .jpg, 1, .jpg, ...

Basic | **Advanced**

Info: Frame count: | Lost frame count: | Frames per second: | Last frame arrived at: | [Log window]

Save log to file | Clear log

Status: Idle

Hor. projection | Ver. projection

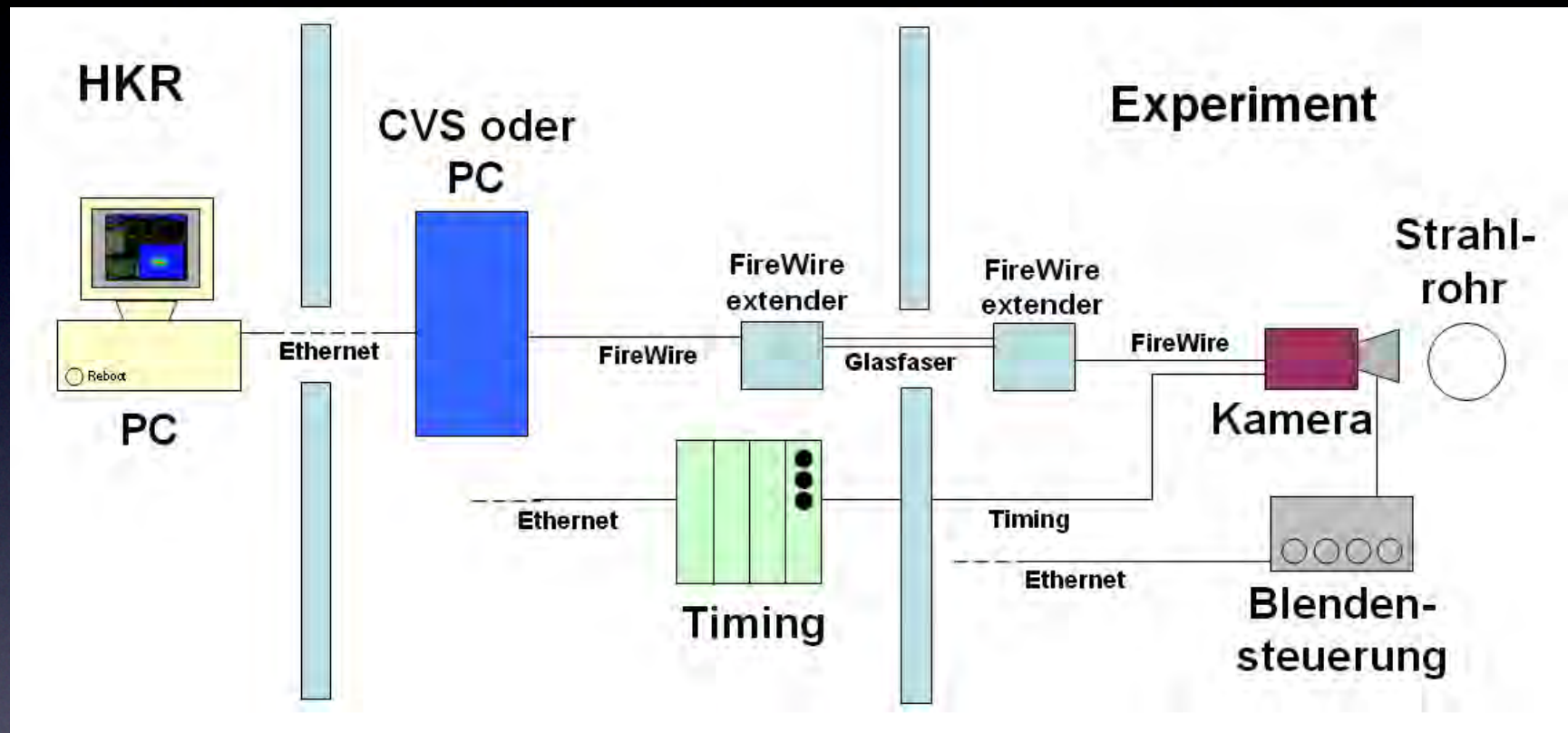
average pixel value vs. picture row/line number [pixel]

Scale image to fit screen



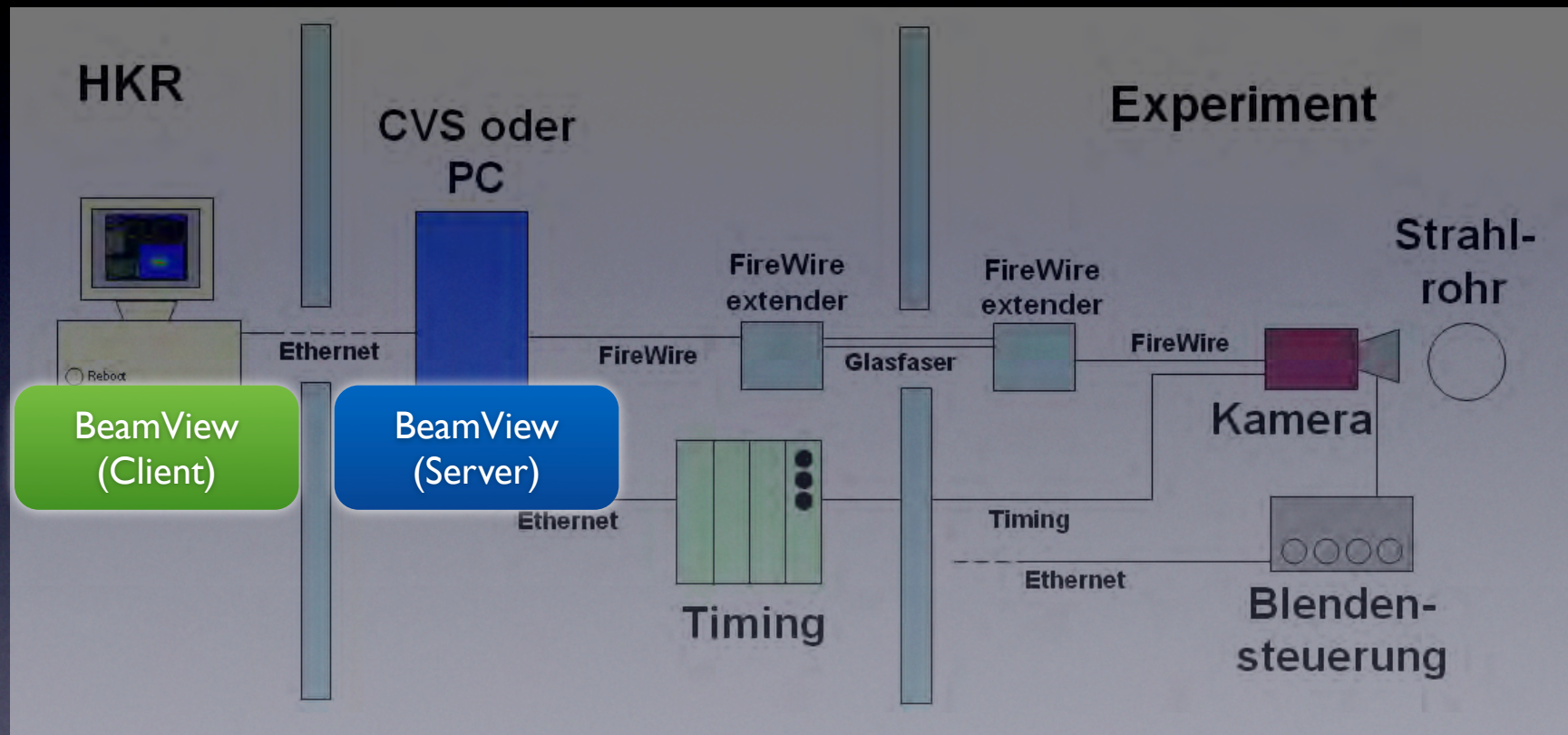
The interface features two side-by-side plots: 'Hor. projection' and 'Ver. projection'. Both plots have 'average pixel value' on the y-axis (0 to 1000) and 'picture row number [pixel]' or 'picture line number [pixel]' on the x-axis (0 to 1000). Each plot includes an 'Enable binning' checkbox and an 'Auto scale' checkbox. Below the plots is a 'Scale image to fit screen' checkbox. The main image area shows a red scintillator screen with the text 'GS II HELMHOLTZ JENSENSCHAFT' and a logo. The top of the screen has a title bar 'BeamView' and buttons for 'Help / Wishes', 'Exit', 'Screenshot', and 'Expert mode'. The left side contains a control panel with various settings and status indicators.

# BeamView - Hardware



CVS = Compact Vision System

# BeamView - Software



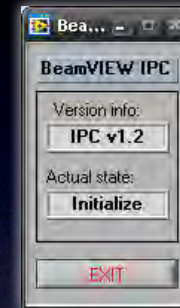
CVS = Compact Vision System

# BeamView - Software

BeamView  
(Client)



BeamView  
(Server)



Programmiersprache	C++	LabView
läuft auf	Windows, Linux, Apple	Windows oder PharLap
von	Rainer	Firma Hagel

# BeamView - Funktionen

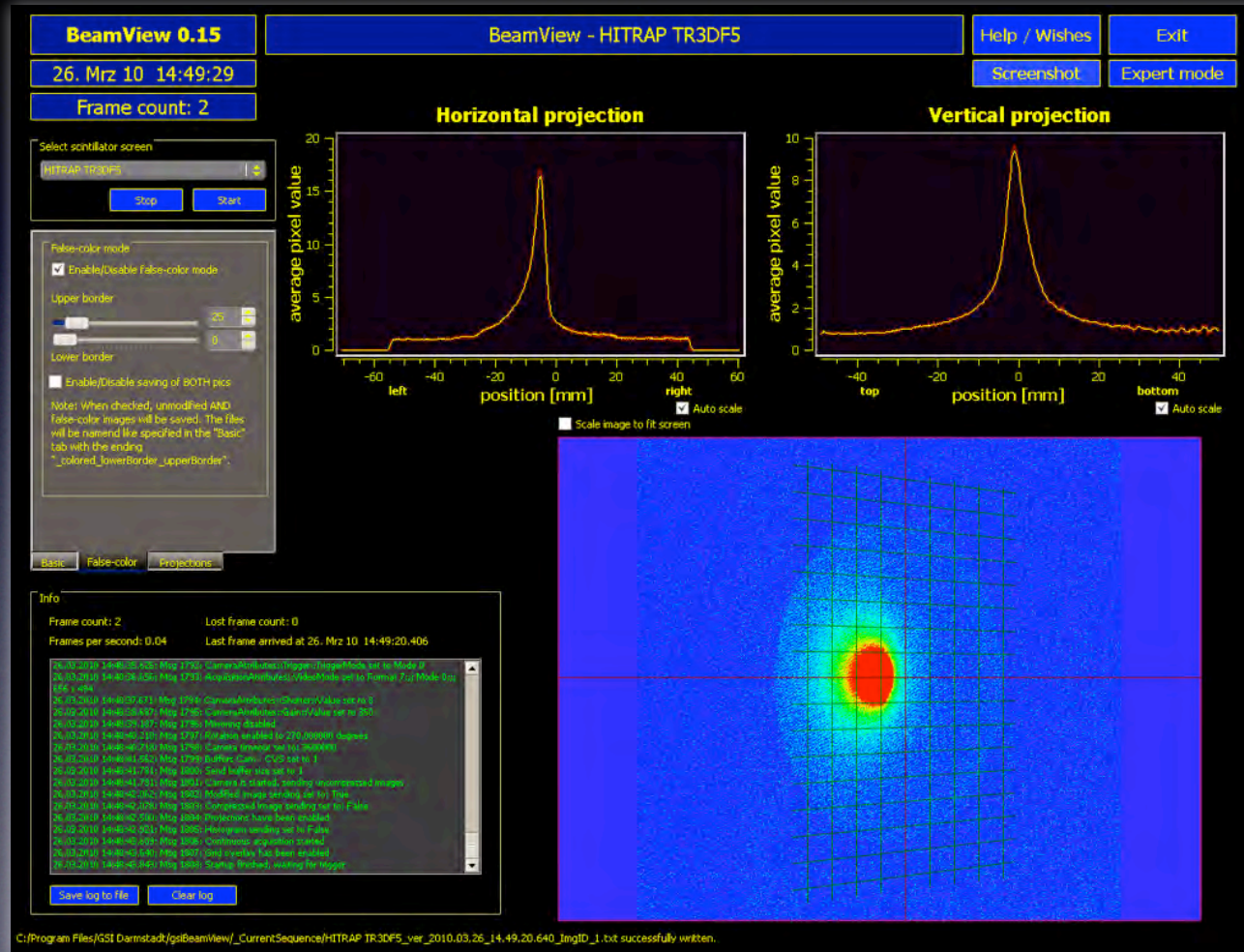
BeamView  
(Client)

- Anzeigen und Speichern von:  
Bildern, Projektionen, Histogrammen, Counterdaten
- Steuert:  
die Kamera (über Server),  
Blende (über Objektivsteuerungskästchen),  
Timing (über KevinsTimingKiste)

weitere Funktionen (teilweise serverseitig): Spiegeln, Drehen, Koordinatensystem einblenden, Falschfarben, 14bit Kameraauslese, perspektivisch Entzerren, sämtliche Kameraparameter setzen

# BeamView im Einsatz

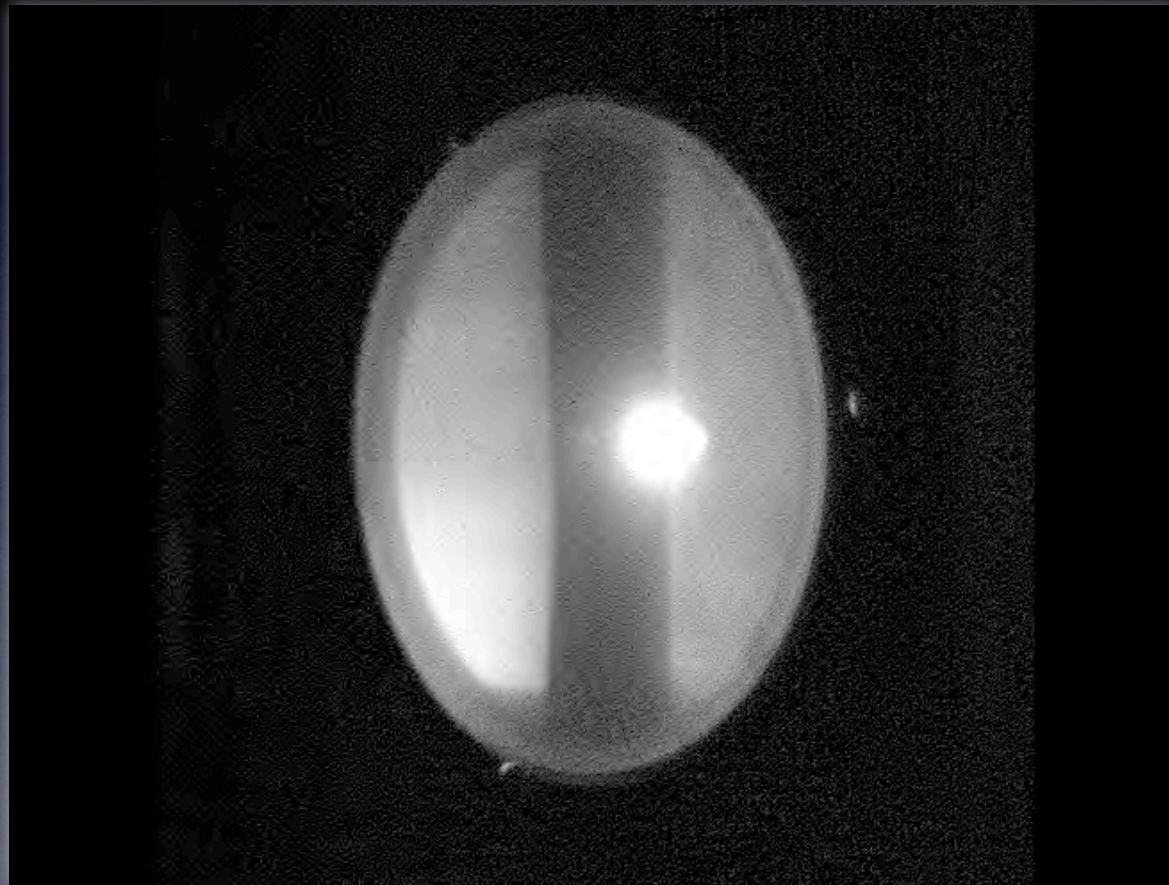
## Hitrap





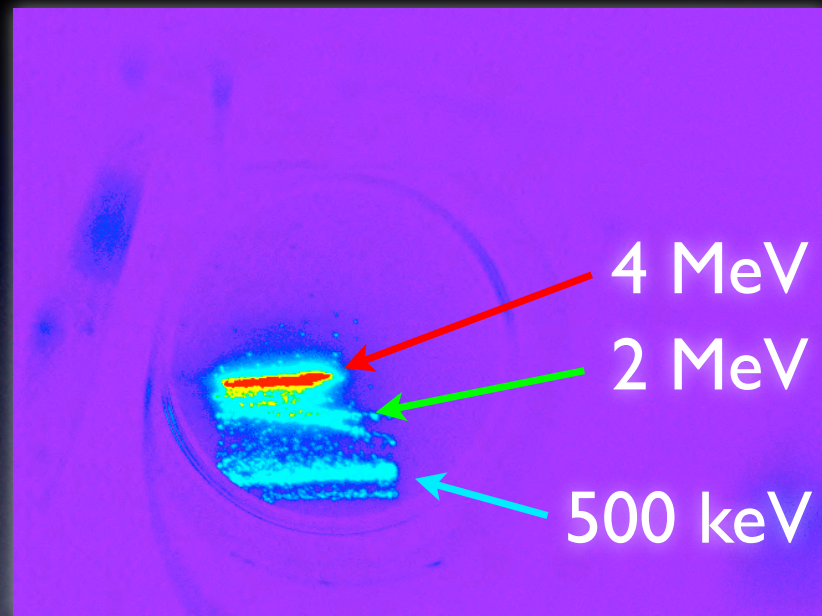
# BeamView im Einsatz

Hitrap



# BeamView im Einsatz

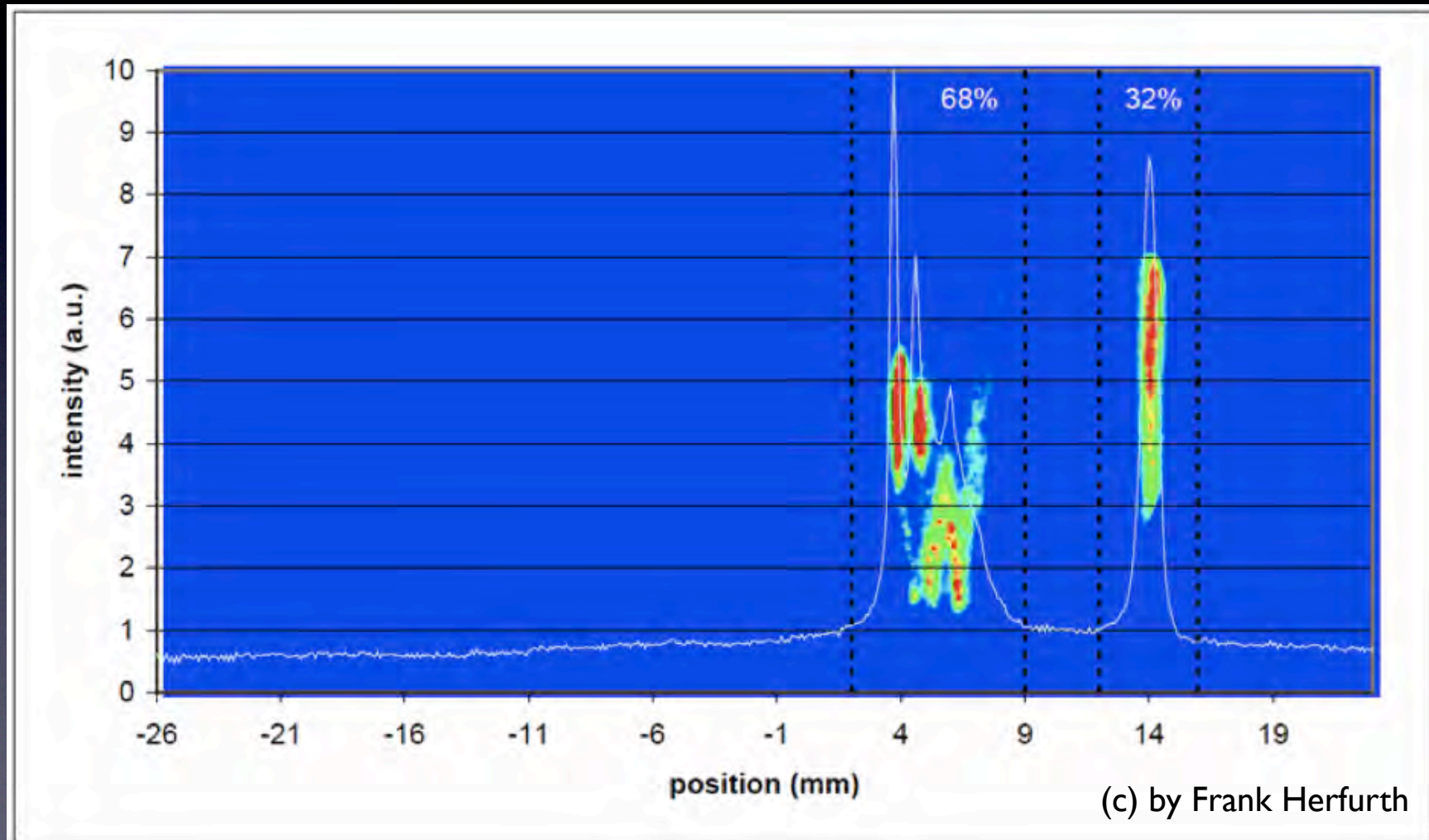
## Hitrap



MCP Kamera hinter IH Struktur  
März 2010

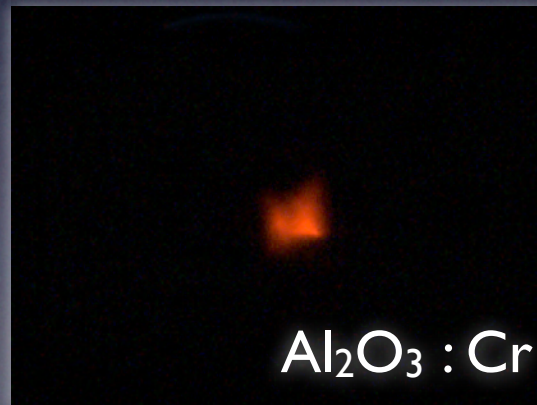
# BeamView im Einsatz

## Hitrap



# BeamView im Einsatz

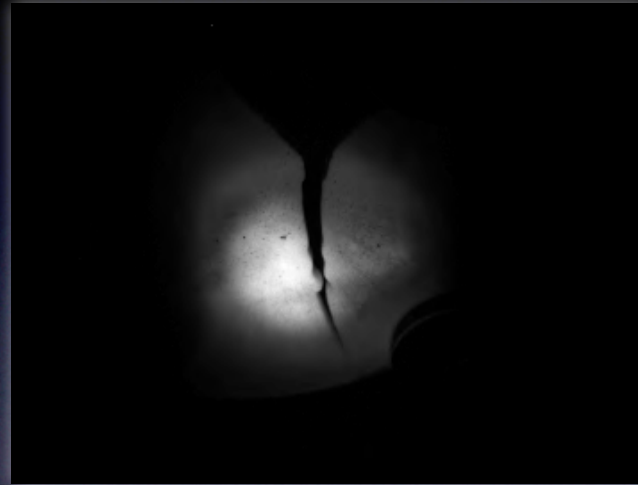
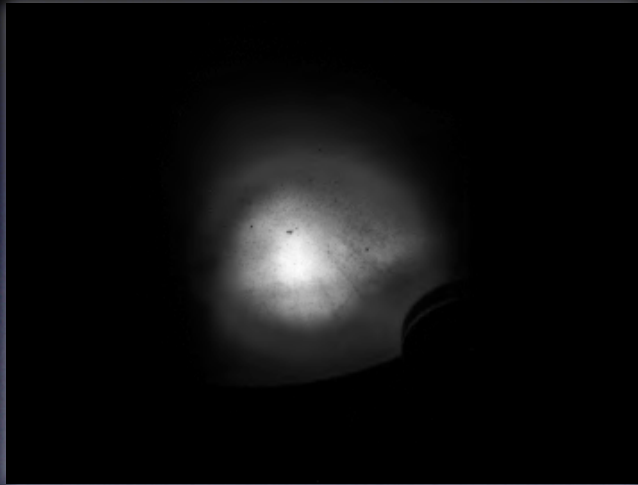
## Leuchttargetuntersuchungen



$^{64}\text{Ni}^{9+}$  @ 11.4 MeV/u,  
~12  $\mu\text{A}$ , 200  $\mu\text{s}$  pulse length,  
 $2 \cdot 10^9$  ppp  
Eiko, Oktober 2008

# BeamView im Einsatz

## Leuchttargetuntersuchungen



ZrO<sub>2</sub> target break

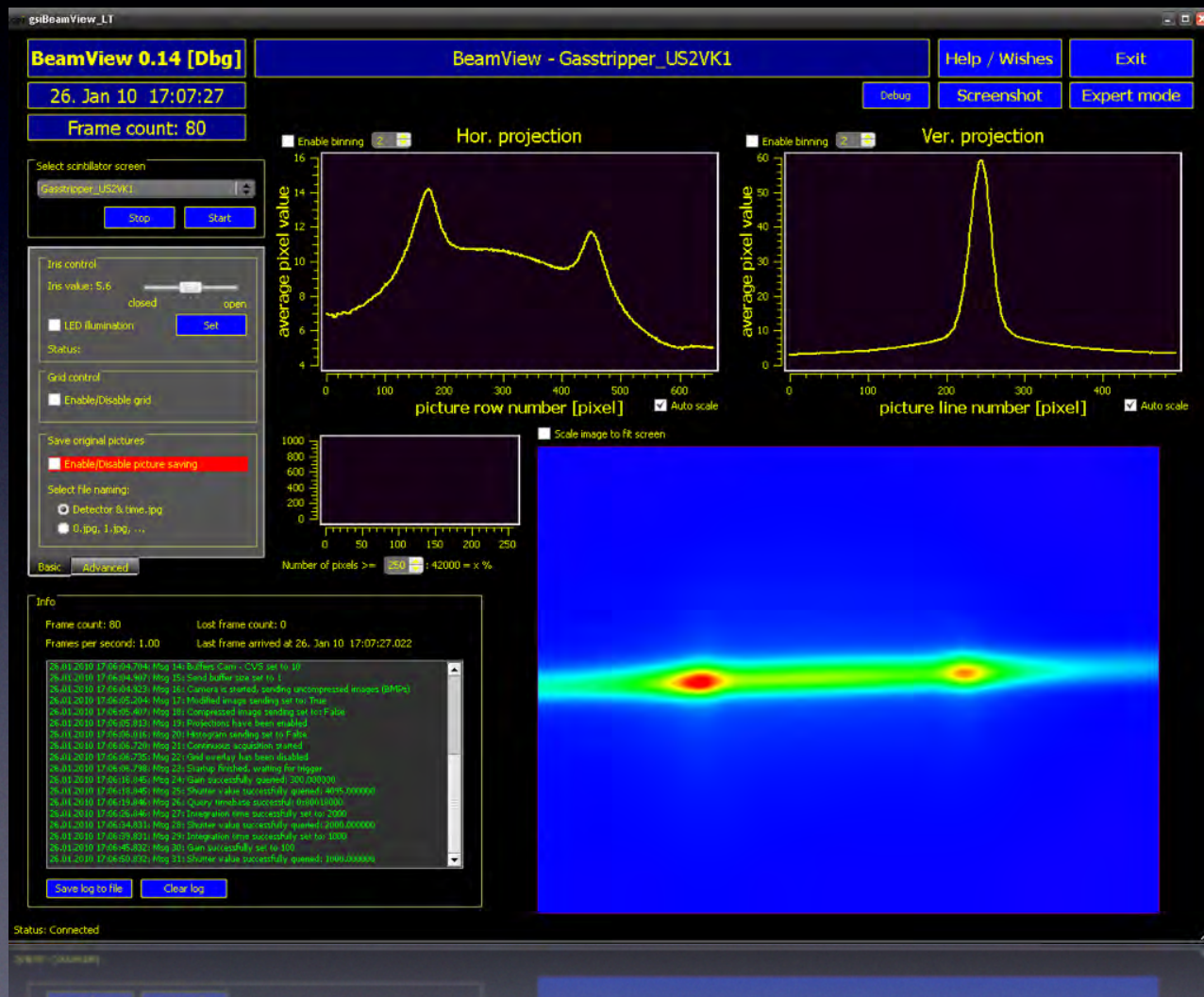
100 pulses of  $^{40}\text{Ar}^{10+}$  @ 11.4 MeV/u,

~1.3 mA, 1 ms pulse length,

$1.6 \cdot 10^{11}$  ppp

# BeamView im Einsatz

## Unilac Gasstripper



# BeamView im Einsatz

## Unilac Gasstripper



# BeamView im Einsatz

## Unilac Folienstripper

**BeamView 0.16** BeamView - Gasstripper\_US2VK1\_FREE RUN Help / Wishes Exit

04. Jun 10 10:13:22 Screenshot Expert mode

Frame count: 36510

Select scintillator screen  
Gasstripper\_US2VK1\_FREE RUN  
Stop Start

iris control  
Iris value: 1.4 closed open  
 LED illumination Set  
Status: illuminated OFF

Grid control  
 Enable/Disable grid

Save original pictures  
 Enable/Disable picture saving

Select file naming:  
 Detector & time.jpg  
 0.jpg/png, 1.jpg/png, ...

Basic False-color Timing Projections

### Horizontal projection

average pixel value  
position [mm]  
left right Auto scale

### Vertical projection

average pixel value  
position [mm]  
top bottom Auto scale

Scale image to fit screen

Info  
Frame count: 36510 Lost frame count: 0  
Frames per second: 8.00 Last frame arrived at 04. Jun 10 10:13:23.133

```
04.06.2010 10:13:21.132: Msg 17: Modified image mapping set to blue
04.06.2010 10:13:21.132: Msg 18: Completed image mapping set to blue
04.06.2010 10:13:21.133: Msg 19: Received TWTG beammode
04.06.2010 10:13:21.133: Msg 20: Histogram loading set to false
04.06.2010 10:13:21.134: Msg 21: Unilac is available
04.06.2010 10:13:21.134: Msg 22: Grid control: Grid lines loaded
04.06.2010 10:13:21.134: Msg 23: Control: Beam mode set to top
04.06.2010 10:13:21.134: Msg 24: Stripper: After successfully set to 400
04.06.2010 10:13:21.134: Msg 25: Stripper: z-pos: 0.0 program File:PSI
04.06.2010 10:13:21.134: Msg 26: BeamView: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 27: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 28: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 29: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 30: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 31: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 32: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 33: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 34: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 35: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 36: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 37: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 38: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 39: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 40: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 41: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 42: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 43: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 44: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 45: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 46: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 47: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 48: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 49: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 50: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 51: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 52: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 53: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 54: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 55: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 56: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 57: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 58: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 59: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 60: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 61: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 62: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 63: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 64: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 65: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 66: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 67: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 68: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 69: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 70: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 71: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 72: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 73: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 74: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 75: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 76: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 77: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 78: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 79: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 80: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 81: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 82: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 83: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 84: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 85: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 86: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 87: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 88: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 89: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 90: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 91: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 92: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 93: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 94: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 95: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 96: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 97: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 98: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 99: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
04.06.2010 10:13:21.134: Msg 100: Stripper: BeamView: 2010.06.04_10:13:20.064.jpg
```

Save log to file Clear log

E:/Program Files/GSI Darmstadt/BeamView V 0.16/ CurrentSequence/Gasstripper\_US2VK1\_FREE RUN ver. 2010.06.04\_10.12.48.789 ImgID\_36251.txt successfully written.



# BeamView im Einsatz

## Unilac Folienstripper

The screenshot displays the BeamView software interface for the Unilac Folienstripper. The main window title is "BeamView - Gasstripper\_US2VK1 - Virtual Acc 10". The top status bar shows "06. Jun 10 10:41:02" and "Frame count: 1687".

On the left, there are several control panels:

- Select scintillator screen:** A dropdown menu is set to "Gasstripper\_US2VK1". Below it are "Stop" and "Start" buttons.
- Iris control:** Shows "Iris value: 5.6" with a slider between "closed" and "open" positions. There is a "Set" button and an "LED illumination" checkbox.
- Grid control:** Features a checked checkbox for "Enable/Disable grid".
- Save original pictures:** Includes an "Enable/Disable picture saving" checkbox and a "Select file naming:" section with radio buttons for "Detector & time.jpg" and "0.jpg(png, 1.jpg(png, ...".

The main display area contains two plots:

- Horizontal projection:** A line graph with "average pixel value" on the y-axis (0-600) and "position [mm]" on the x-axis (-30 to 30). The x-axis is labeled "left" and "right".
- Vertical projection:** A line graph with "average pixel value" on the y-axis (0-250) and "position [mm]" on the x-axis (-20 to 20). The x-axis is labeled "top" and "bottom".

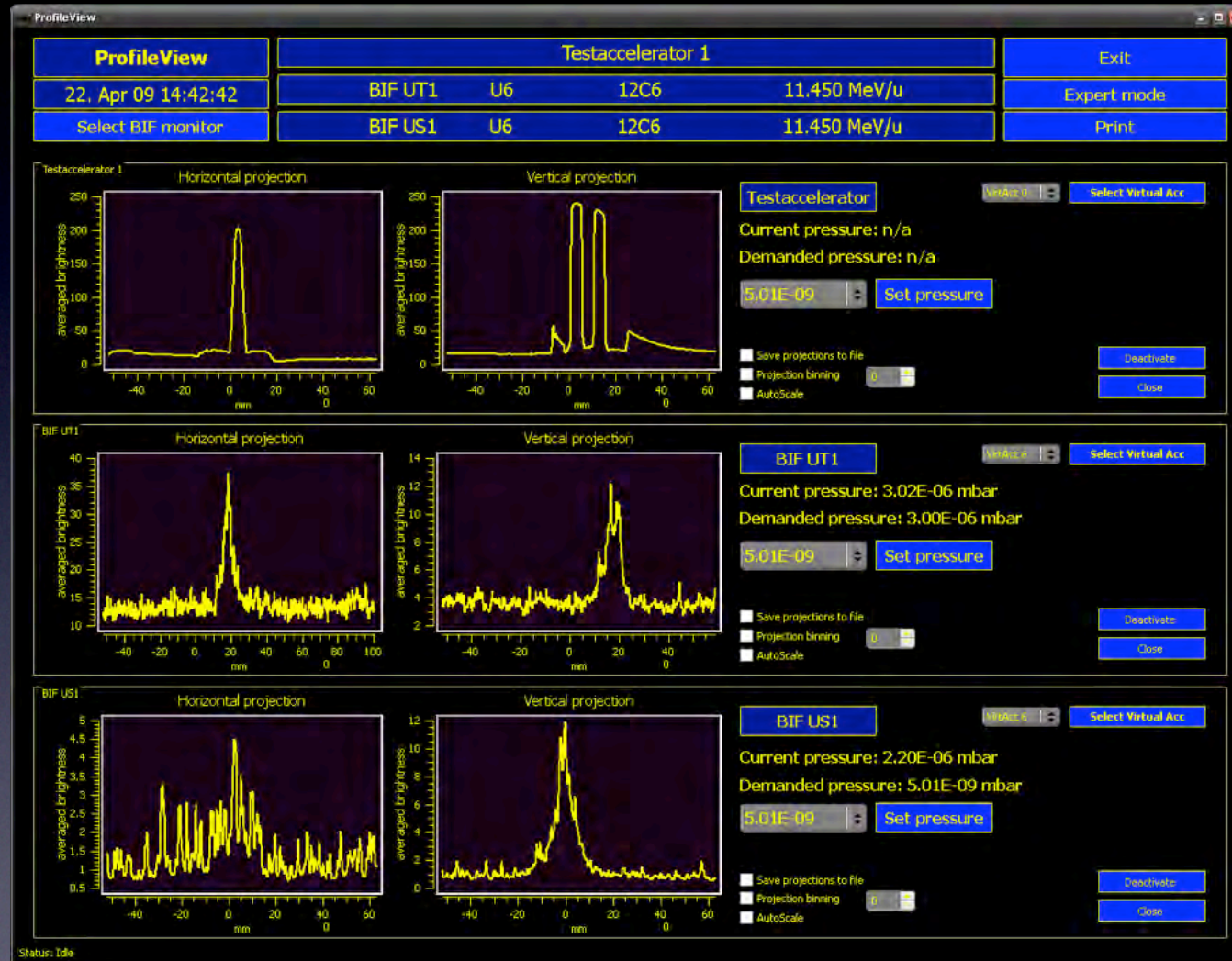
A large pink arrow points from the vertical projection plot to a central grayscale image. This image shows a beam spot on a grid with a red crosshair. A checkbox "Scale image to fit screen" is located above the image.

At the bottom left, an "Info" panel displays system data:

- Frame count: 1687 | Lost frame count: 0
- Frames per second: 1.00 | Last frame arrived at: 06. Jun 10 10:41:03.318

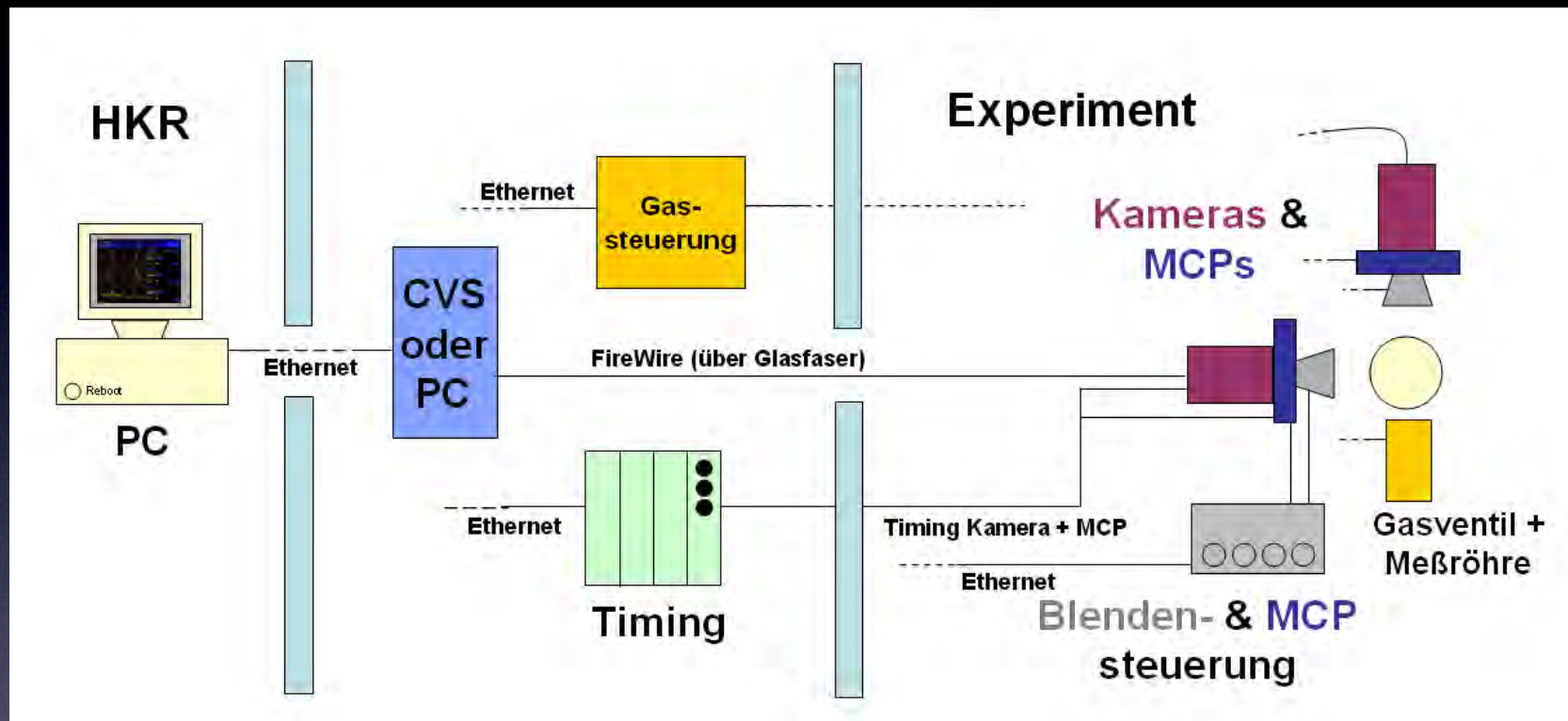
A log window below the info panel shows system messages. At the very bottom, the "Status: Connected" indicator is visible.

# ProfileView



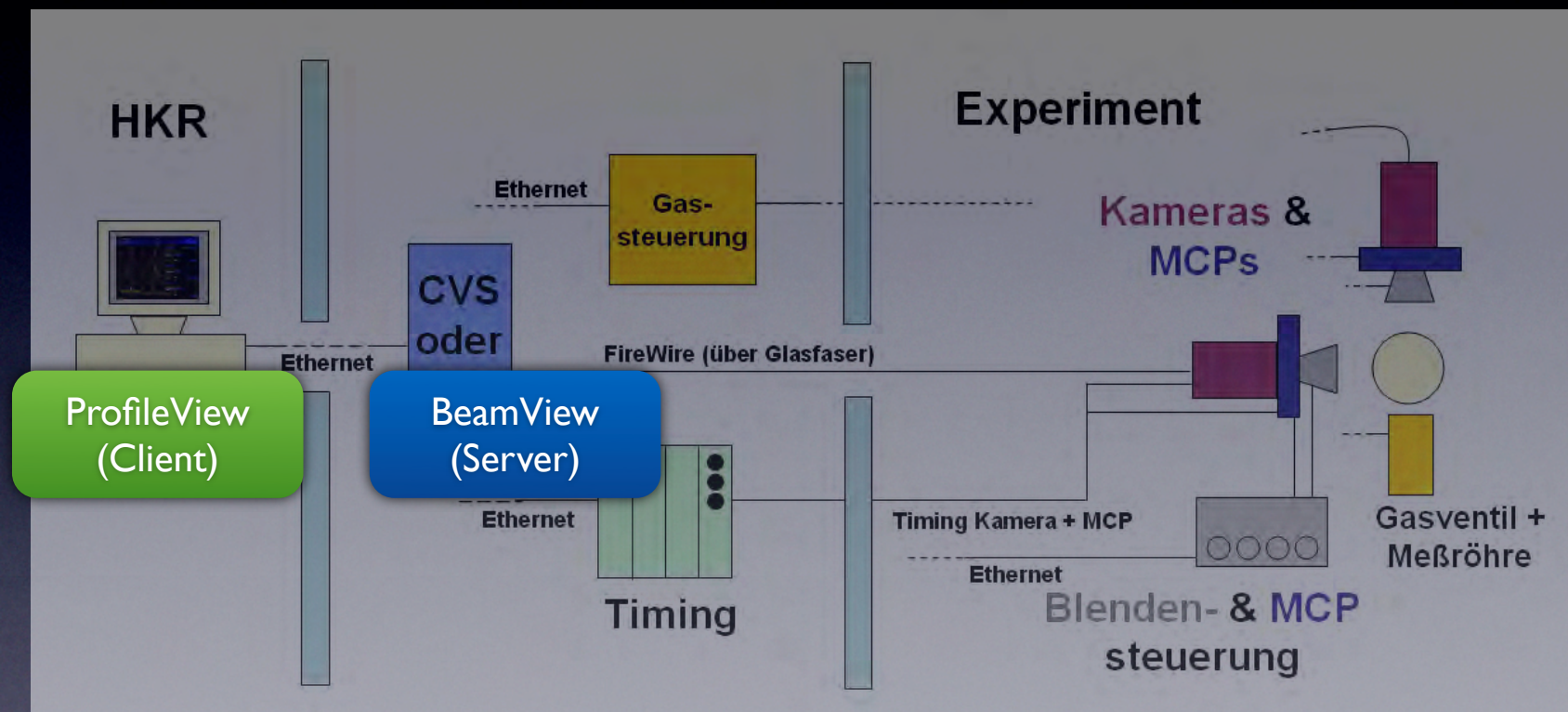
Status: Idle

# ProfileView - Hardware



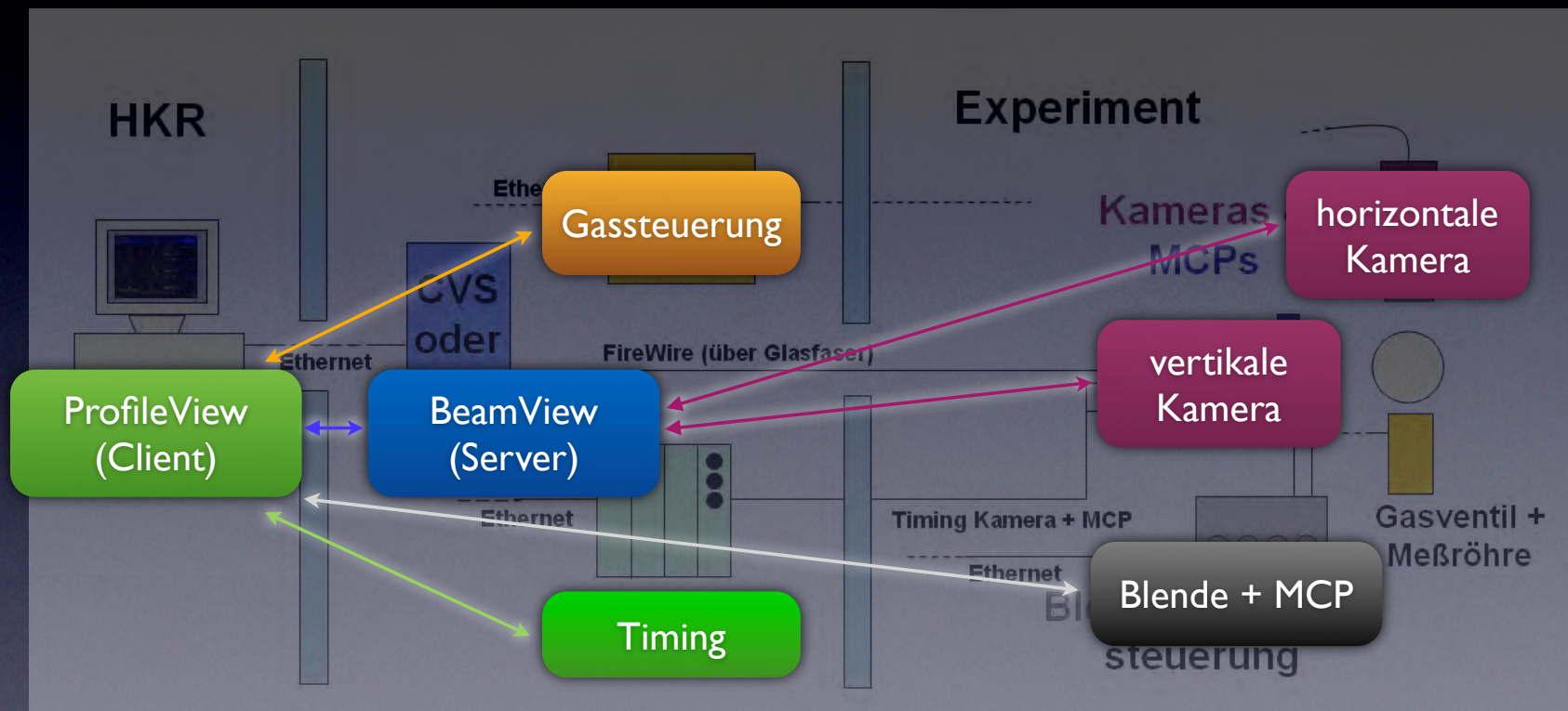
MCP = Microchannel Plate

# ProfileView - Software

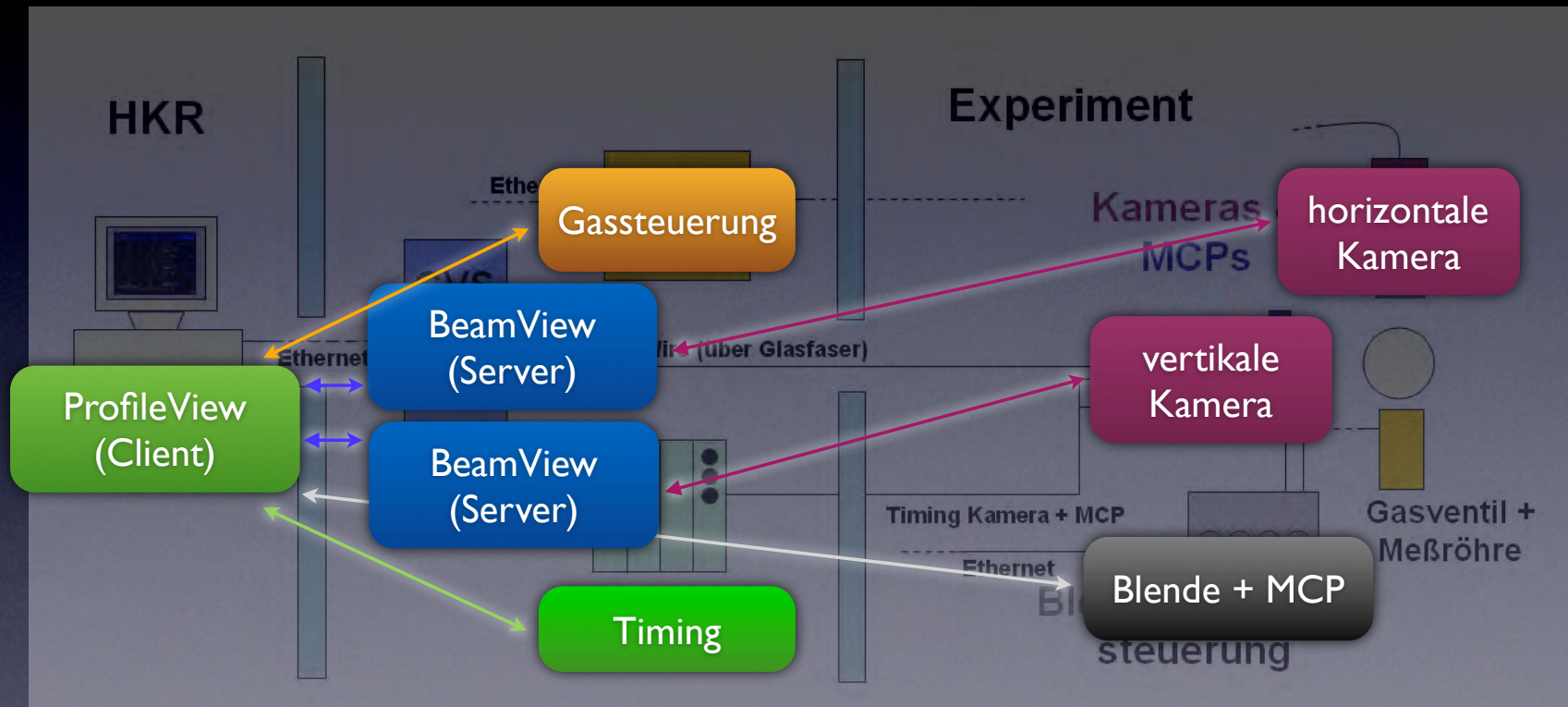


MCP = Microchannel Plate = Bildverstärker

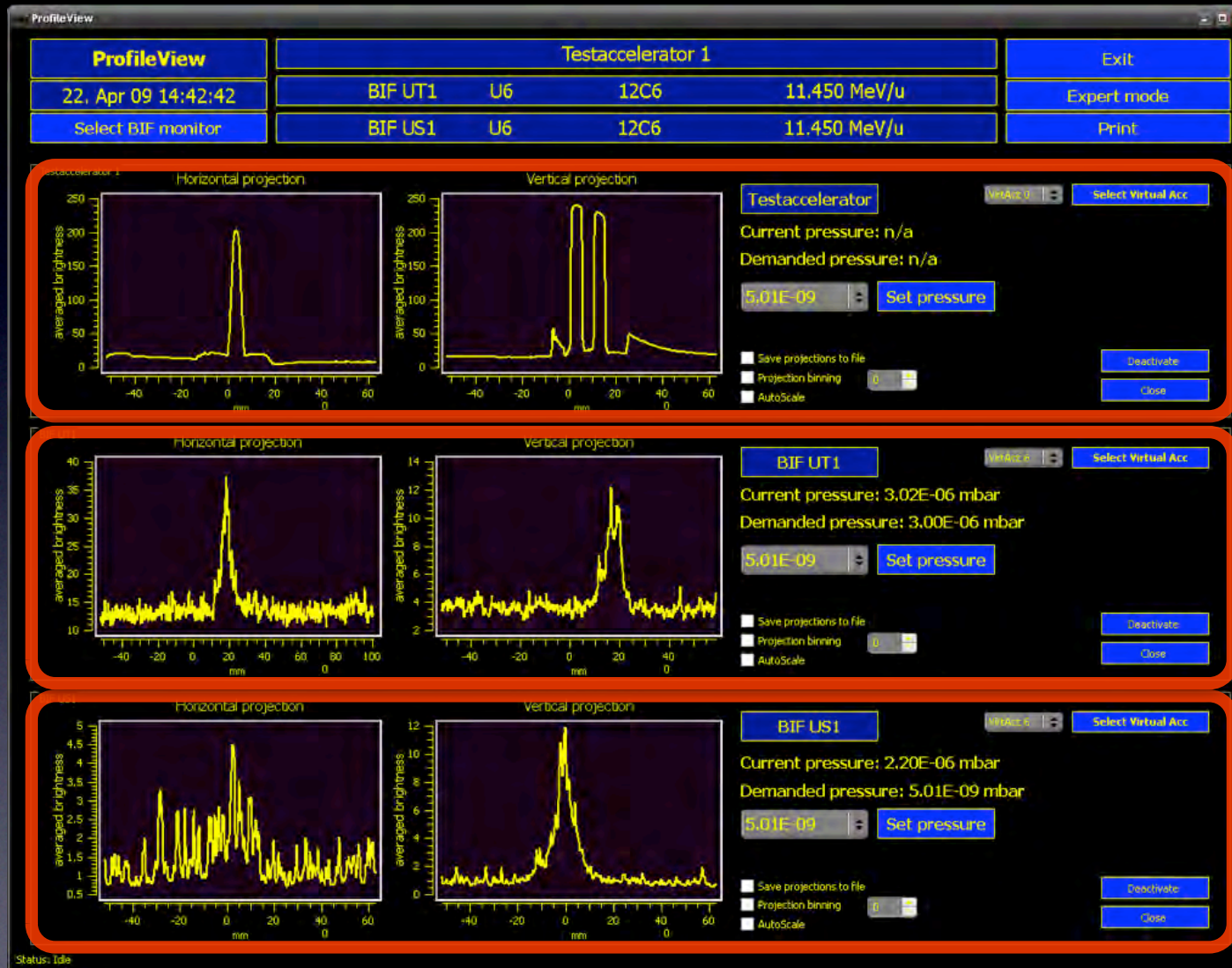
# ProfileView - Softwarespezialitäten



# ProfileView - Softwarespezialitäten



# ProfileView - Softwarespezialitäten

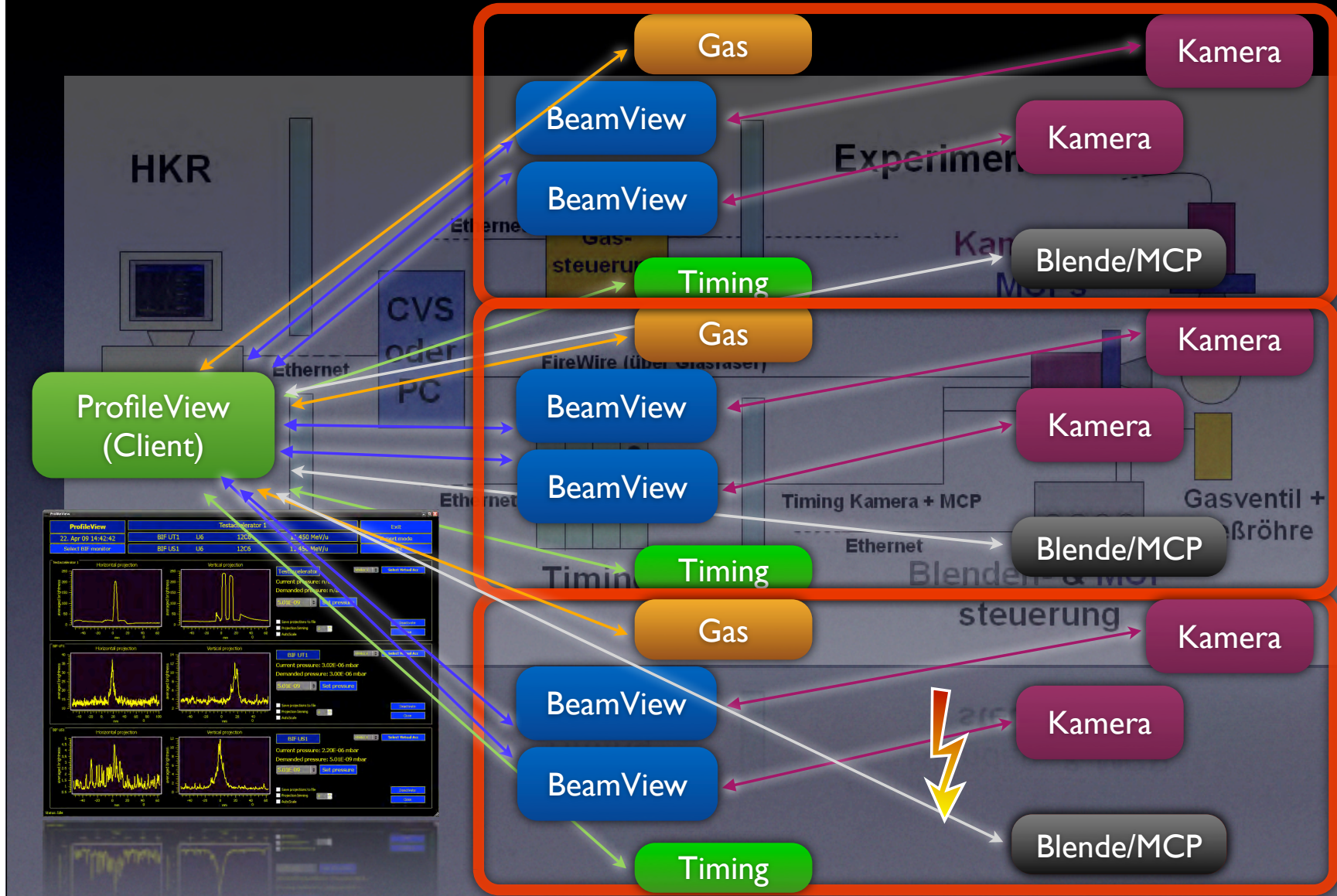


BIF 1

BIF 2

BIF 3

# ProfileView - Softwarespezialitäten





# ProfileView - Softwarespezialitäten

BIF 3-4 VirtAcc 4 Select

Current pressure:  
Demanded pressure:

6.00E-09 Set pressure

Fixed scale Auto scale Semiauto scale

Save projections to file

Status: Error, see log for details. Pause Close

```
3-4: Buffers CVS - network set to 10  
3-4: Original and compressed images disabled  
3-4: Sending of modified images disabled  
3-4: Mirroring disabled  
3-4: Rotation disabled  
3-4: Modified images will be used for projection calcul  
3-4: Cameras armed successfully  
TCP and pressure control started  
UA4: Startup of the horizontal cam  
UA4: TimingControl: New accelerator timing set  
UA4: horizontal cam connected(0x00305300/0x01301E  
UA4: Projections enabled  
UA4: horizontal cam: CameraAttributes::Trigger::Trigg  
UA4: horizontal cam: AcquisitionAttributes::VideoMod  
09.06.2010 14:49:30.303; Msg 32; BIF UA4: horizontal cam: AcquisitionAttributes::Speed set  
09.06.2010 14:49:31.303; Msg 33; BIF UA4: horizontal cam: AcquisitionAttributes::PacketSize  
09.06.2010 14:49:32.303; Msg 34; BIF UA4: horizontal cam: AcquisitionAttributes::Timeout s  
09.06.2010 14:49:33.303; Msg 35; BIF UA4: horizontal cam: CameraAttributes::Shutter::Val  
09.06.2010 14:49:34.303; Msg 36; BIF UA4: horizontal cam: CameraAttributes::Shutter::Val  
09.06.2010 14:49:34.319; Msg 37; BIF 3-4: Pressure control: Hardware does not respond,  
09.06.2010 14:49:35.303; Msg 38; BIF UA4: horizontal cam: CameraAttributes::Gain::Value  
09.06.2010 14:49:36.104; Msg 39; BIF UA4: Buffers: hardware error: 1.0000000000000000
```



Save log to file Clear log

# ProfileView - Funktionen

ProfileView  
(Client)

- Anzeigen und Speichern von:  
Bildern, Projektionen, Screenshots
- Steuert (bis zu):
  - 6 Kameras (über Server),
  - 6 Blenden / 6 MCPs,
  - 3 Timings (Trigger für Kamera, Gate für MCP)
  - 3 Vakuumsteuerungen

weitere Funktionen (teilweise serverseitig): Spiegeln, Drehen, Strahlmitte einblenden, sämtliche Kameraparameter setzen, UNILAC belüften (nur Expert Mode)

# ProfileView im Einsatz



# ProfileView im Einsatz

The screenshot displays the ProfileView software interface. At the top, there are window titles: "Global", "BIF monitor 0 (top) BIF 3-4", "BIF monitor 1 (mid) BIF 3-4", "BIF monitor 2 (bottom) BIF 3-4", and "detectors.ini (or custom.W/64)". On the right side, there are buttons for "Debug", "Screenshot (Expert mode window only)", and "Exit".

The main area is titled "BIF 3-4" and is divided into two columns: "Horizontal camera" and "Vertical camera". Each column contains a live video feed of a star field. Below each video feed is a control panel for "Iris and MCP".

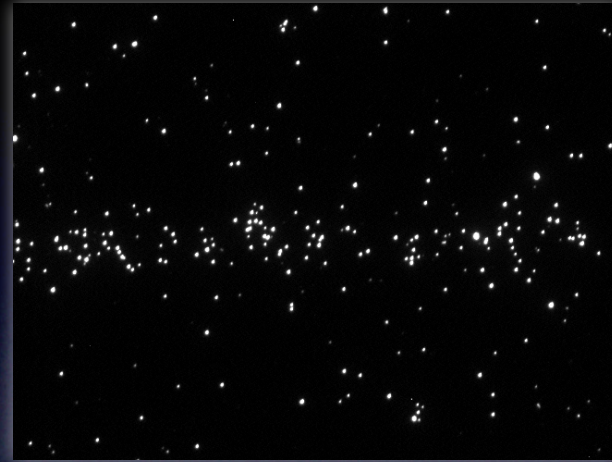
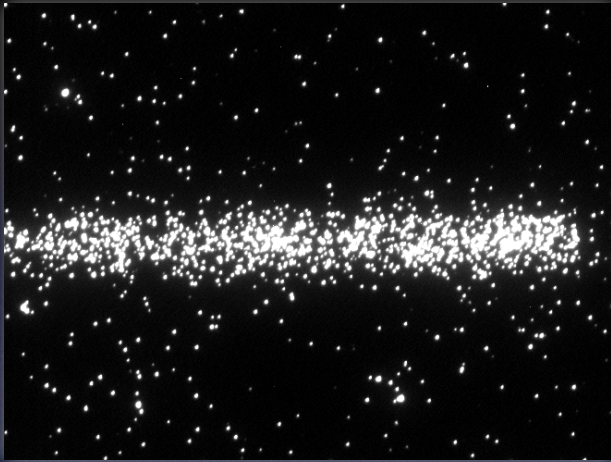
The control panels for both cameras include:

- Sliders for "Iris" (ranging from "closed" to "open") and "MCP [mV]" (ranging from 0 to 1000).
- Buttons for "Start original images" and "Stop original images".
- A "Mirroring" section with a dropdown menu (set to "horizontal"), "Get mirror mode", "Set mirror mode", "Mirroring is n/a", "Get status", "Enable mirroring", and "Disable mirroring".
- A "Rotation" section with a dropdown menu (set to "0.00"), "Get rotation angle", "Set rotation angle", "Rotation is n/a", "Get status", "Enable rotation", and "Disable rotation".
- A "Camera attributes" section with a dropdown menu, "Get cam attributes", "Get attributes", and "Set attribute".
- At the bottom of the control panel, it shows "Type: n/a Mode: n/a".

On the left side of the interface, there is a vertical toolbar with icons for "Cameras", "Pressure", "Iris and MCP", "Timing", and "Reset".

Screenshot saved at g:\Visual Studio 2005\Projects\gs\_sd\gsBeamview\gsBeamview\_BIF\Debug\screenshots\ProfileViewScreenshotExpertMode\_2010.06.09\_10.34.26\_767.png

# ProfileView im Einsatz



gemittelt über  
2700 Bilder

# Trivia

## Anzahl der C++ Quellcodezeilen

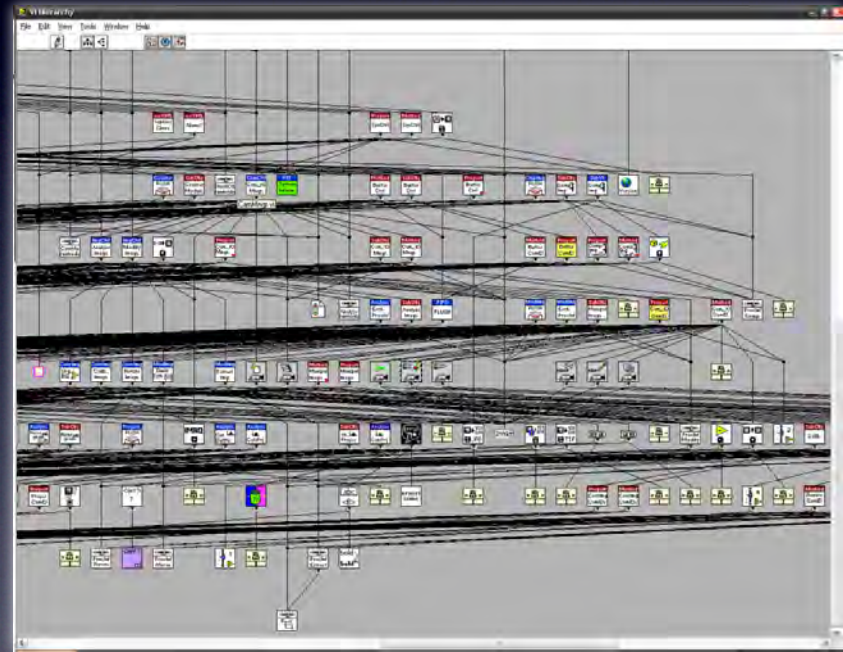
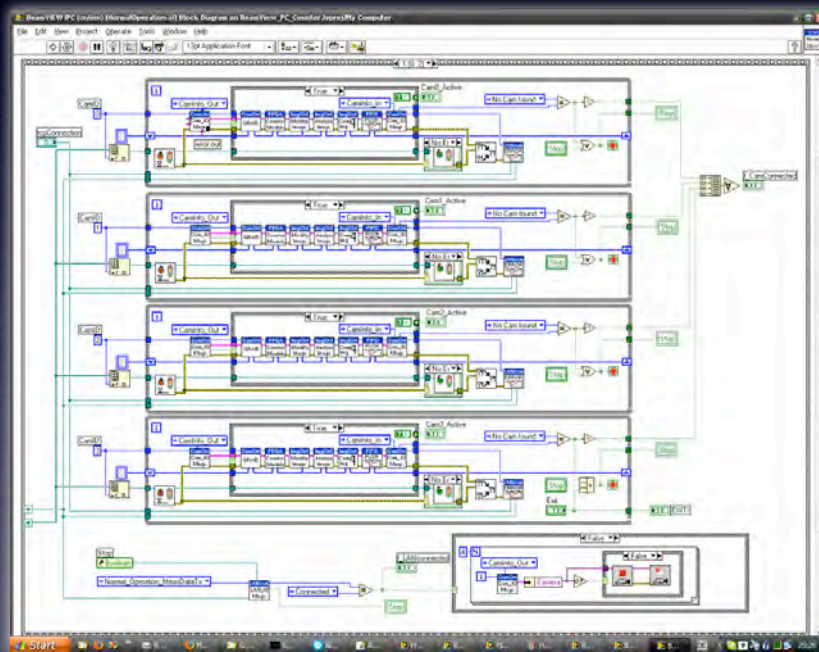
```
[rhaseitl@sdlx005 downloads]$ cloc-1.51.pl ~/tmp/LOC_Count/beamview.tar.gz
 83 text files.
 83 unique files.
 31 files ignored.

http://cloc.sourceforge.net v 1.51  T=1.0 s (52.0 files/s, 24089.0 lines/s)
-----
Language             files      blank      comment      code
-----
C++                   26         2439         4234         12101
C/C++ Header         25         1090         1908          1879
make                   1           79           15           344
-----
SUM:                  52         3608         6157         14324
-----
```

> 14.000

# Trivia

Anzahl der LabView VIs



~ 178

# Trivia

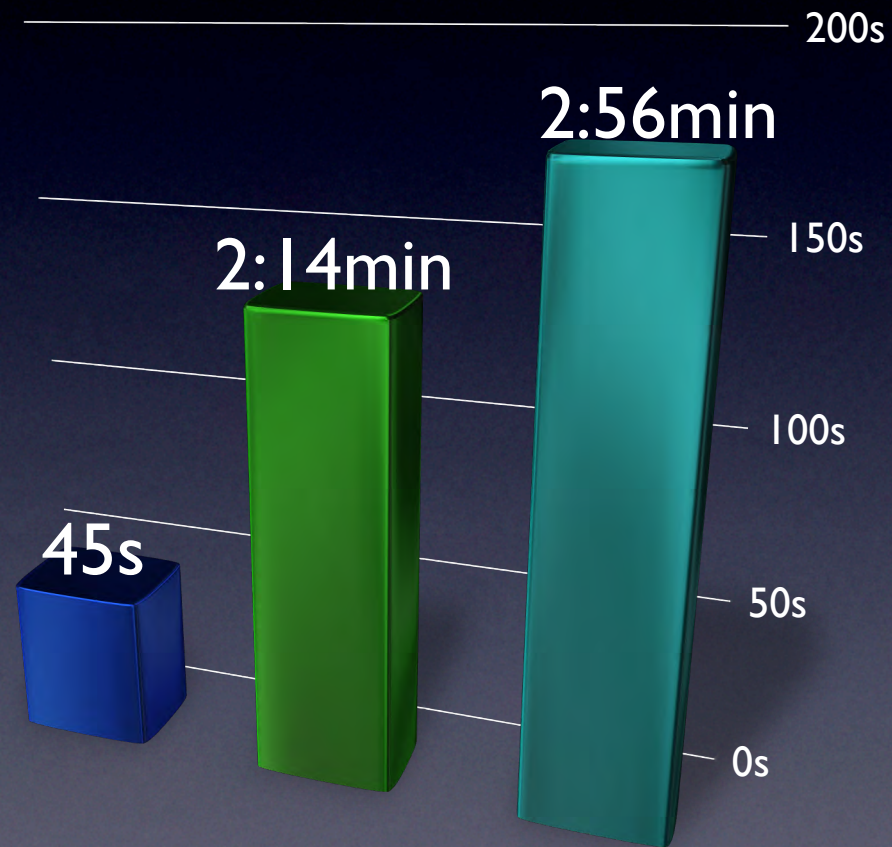
## Kompilierzeit

Visual Studio 2005

gcc 4.1

Xcode 3.2.1 (gcc 4.2)

- Windows QuadCore 2.4 GHz
- Linux DualCore 3 GHz
- MacBook Air DualCore 2.1 GHz

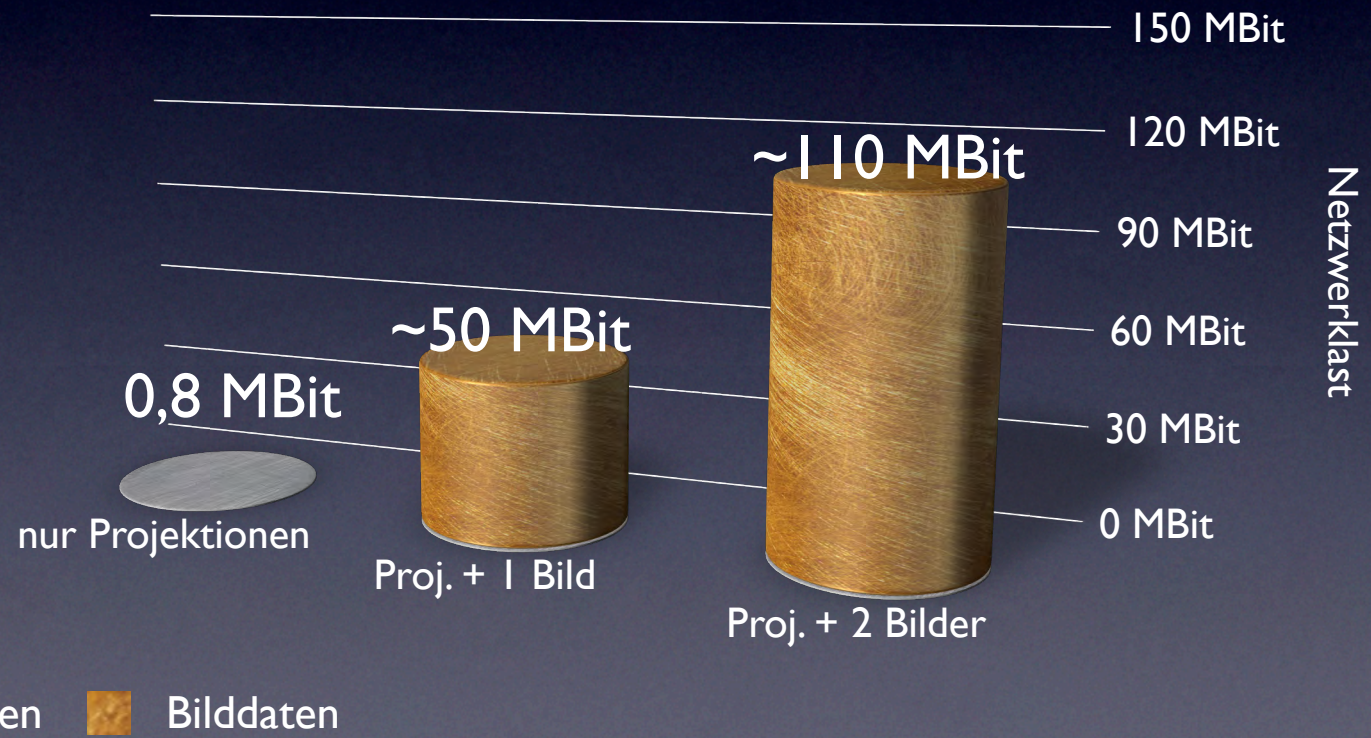




# Trivia

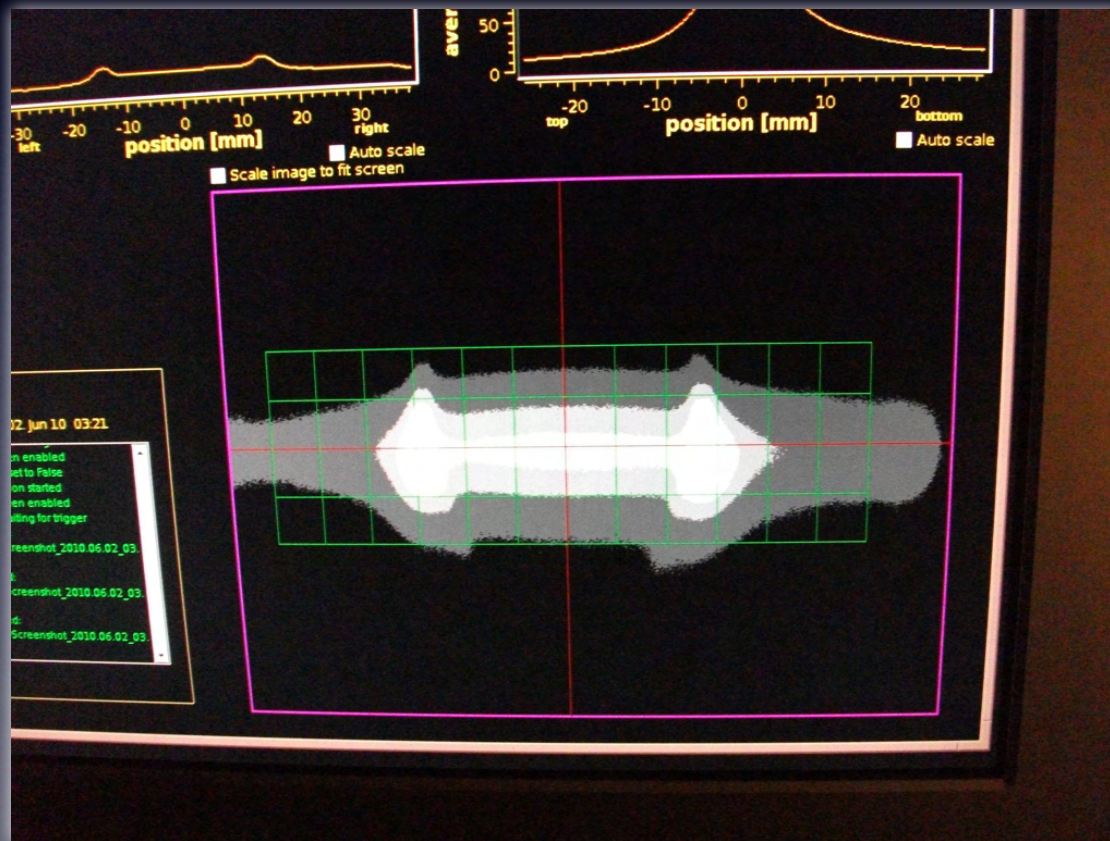
## Datenaufkommen

ProfileView,  
2 Kameras, 20Hz,  
unkomprimierte Bilder 640 x 480  
Server auf PC



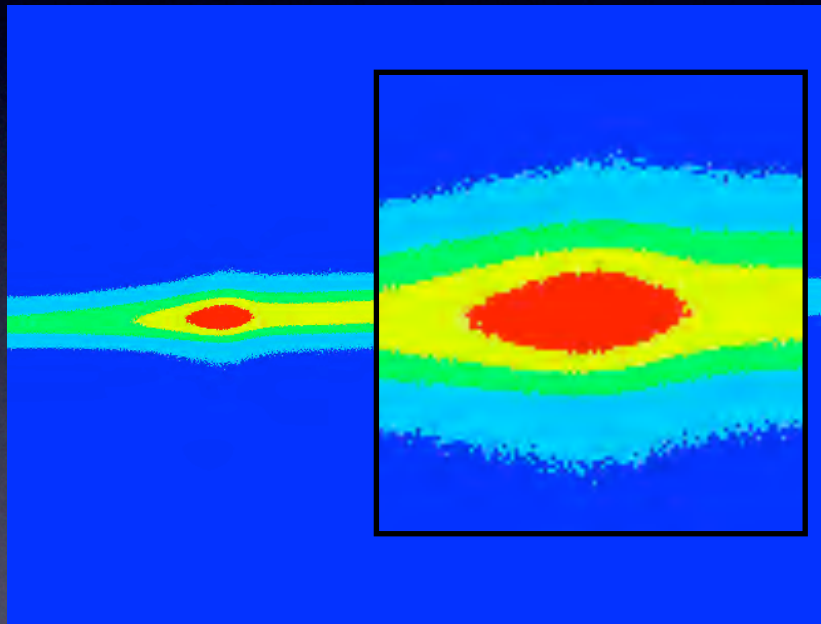
# Trivia

HKR X-Terminal vs. Desktop PC

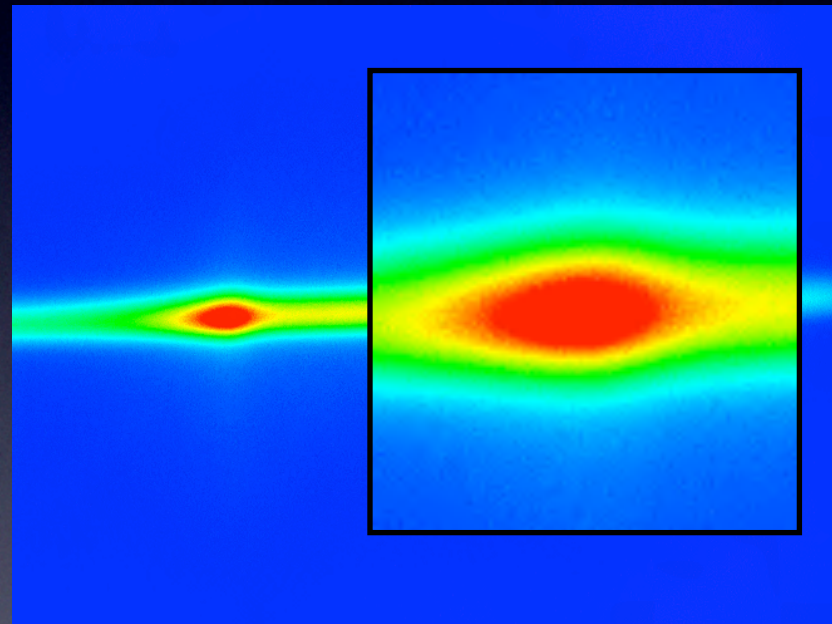


# Trivia

HKR X-Terminal vs. Desktop PC



X-Terminal



Win, Lnx, 

## Fehler

keine bis auf

- Ländereinstellungen (HITRAP)
- RS232 - Ethernet Umsetzer für Drucksteuerung
- Kameraverwaltung (LabView Treiber?)
- Objektiv- und MCP Steuerungen

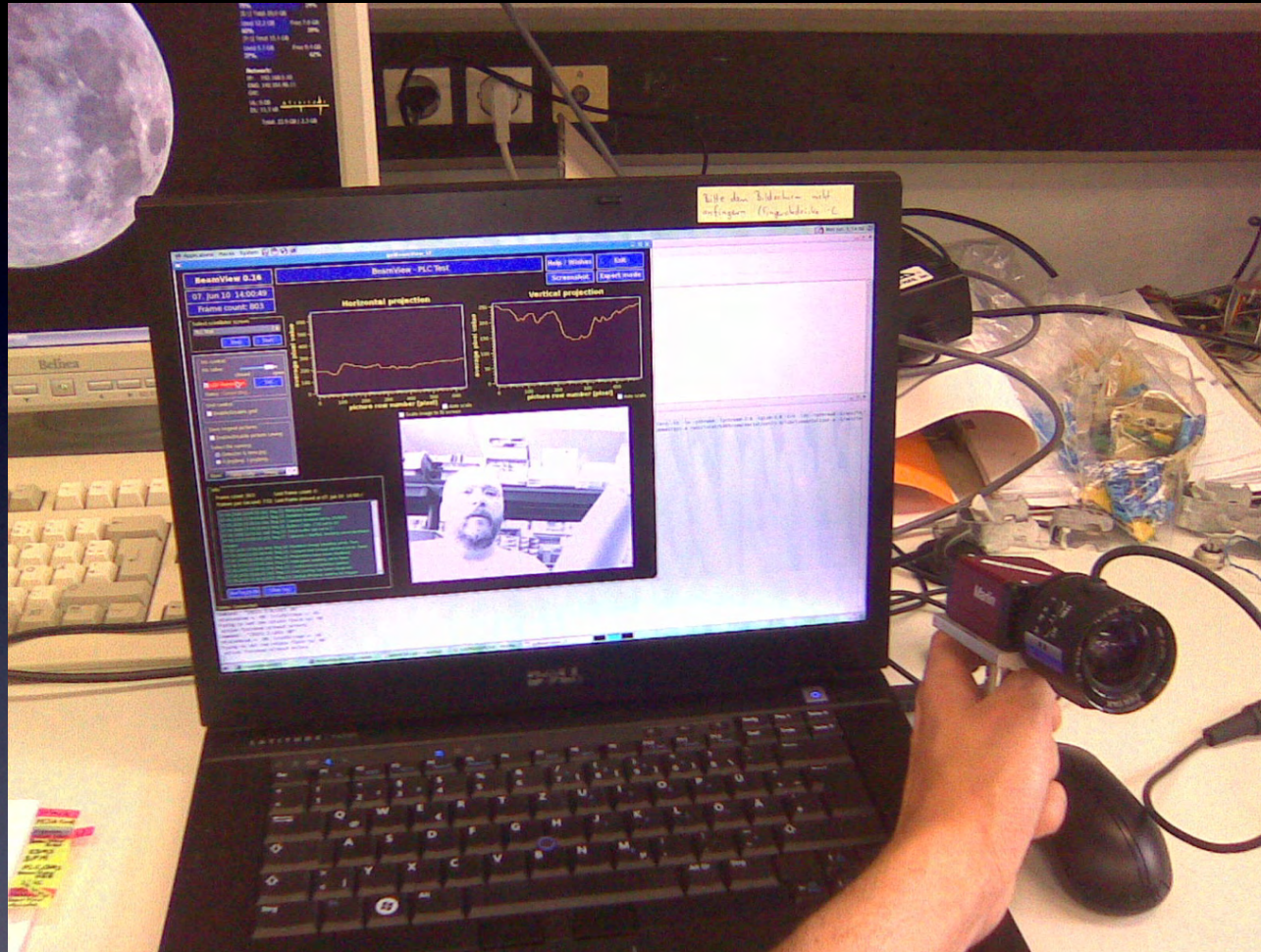
# Ausblick

SPS (Speicherprogrammierbare Steuerung)  
= PLC (Programmable Logic Controller)



# Ausblick

SPS



# Ausblick

jetzt: Vortragsende  
2017: iFAIR

