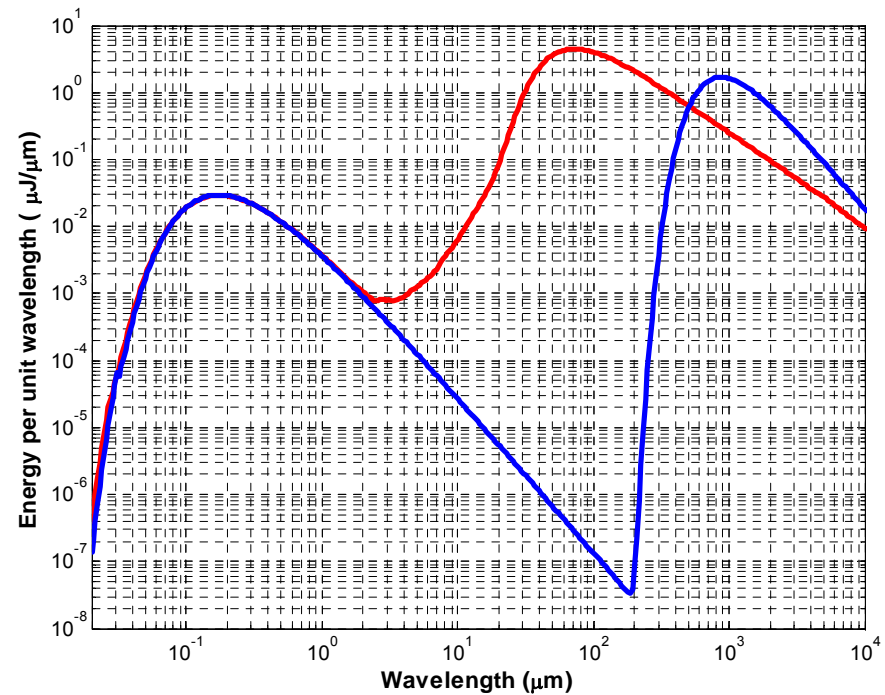
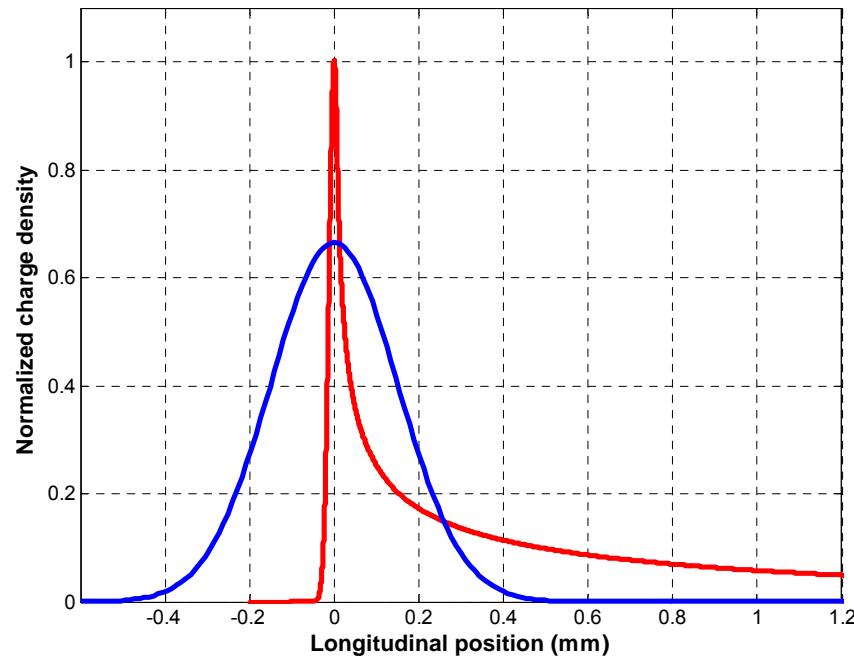
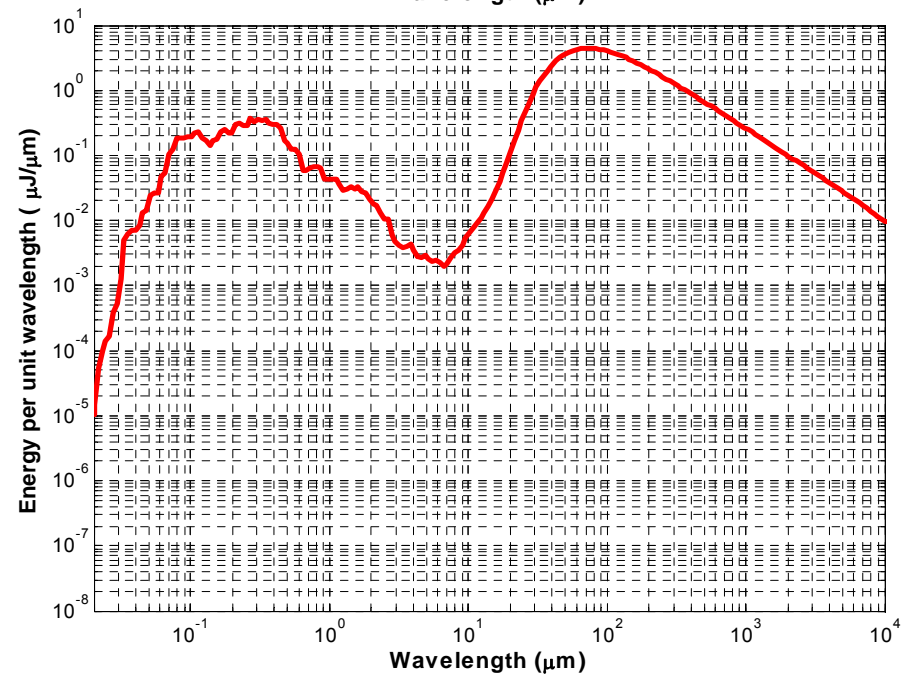
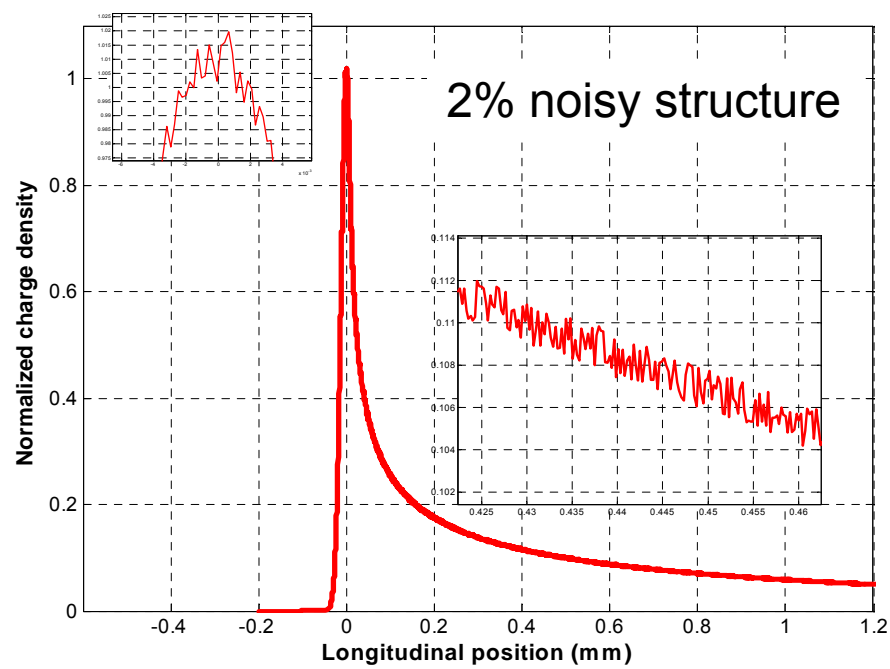
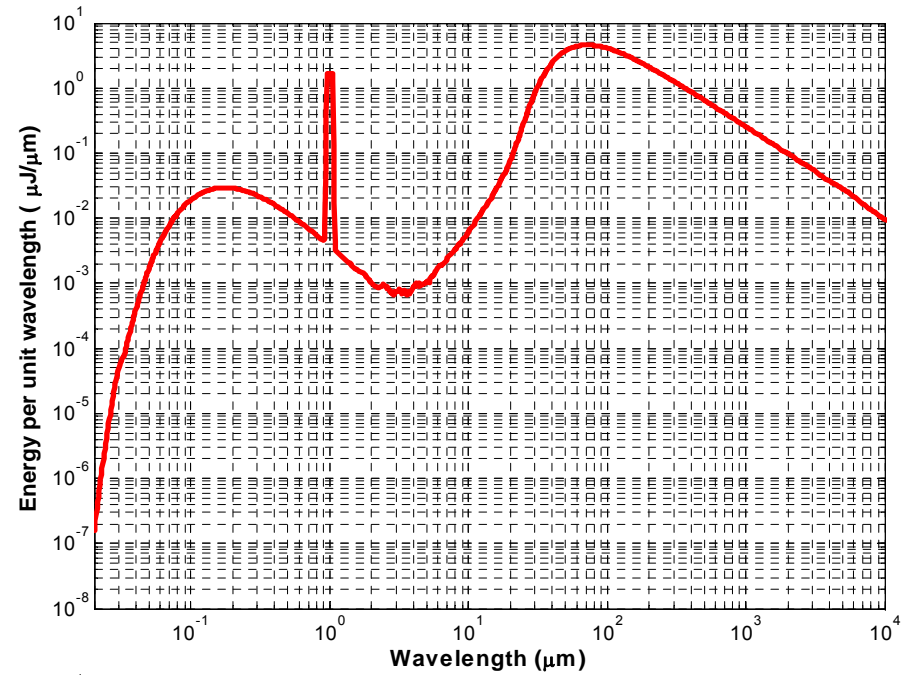
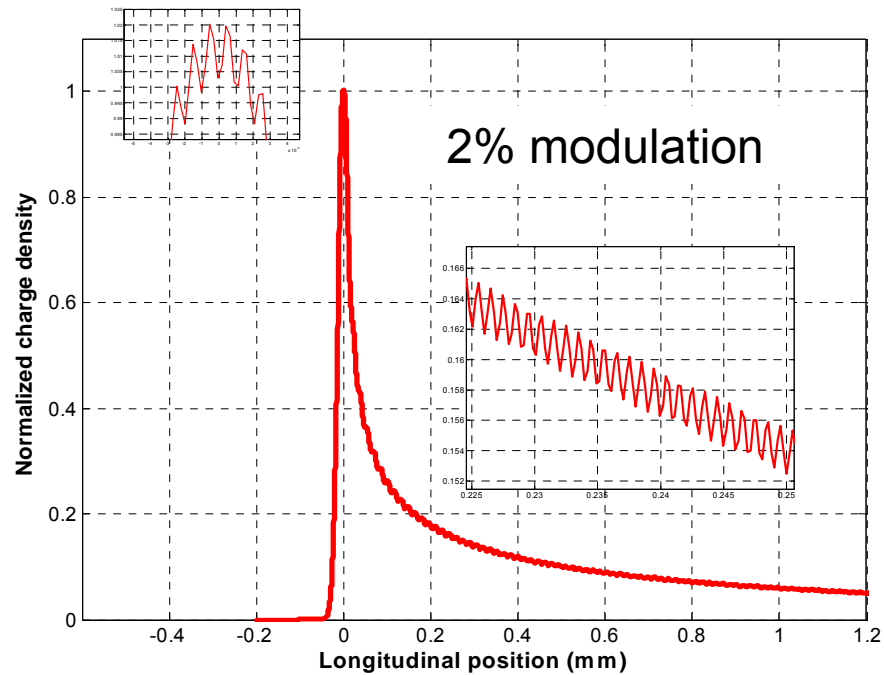


Evidence for 'small-scale structures' through coherent radiation

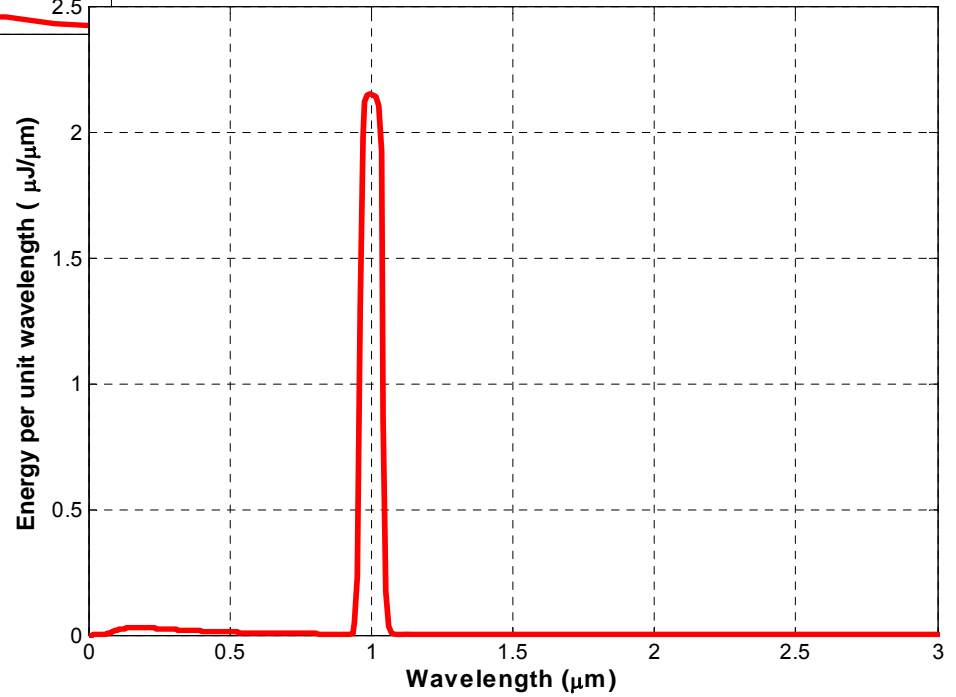
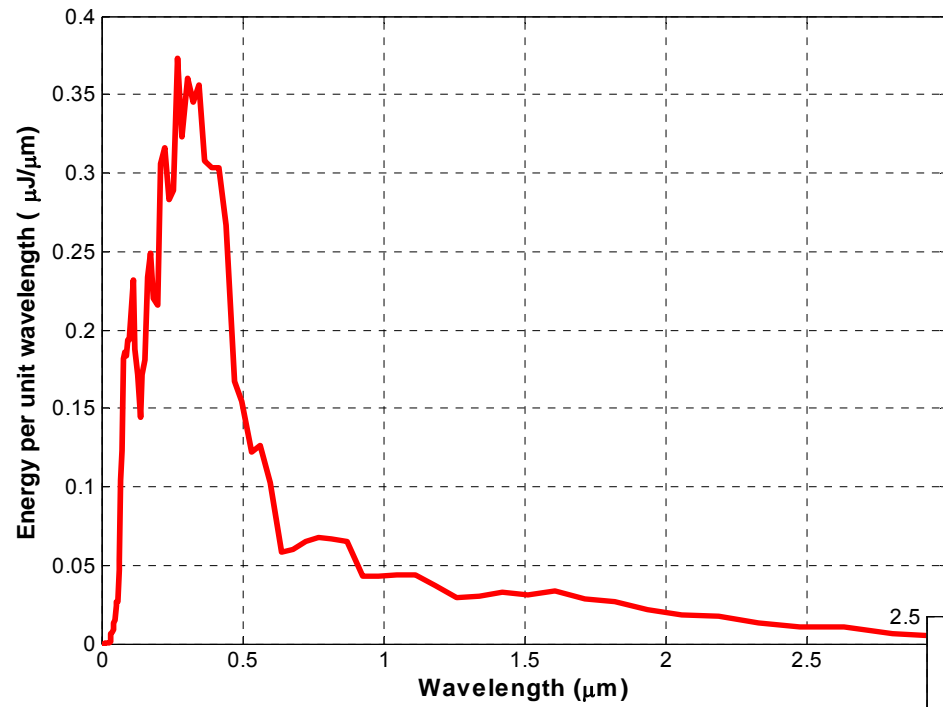
Partly qualitative, partly speculative, partly quantitative

Oliver Grimm, 12 November 2007





...linear scales



Optical replica camera

The screenshot shows the OS2.CAM1 camera control interface. At the top, the title bar reads "OS2.CAM1". Below it, a status bar shows "Info: Online", "TCP: disconnected", "Camera: 20710338", and "0". The main image area displays a saturated biological specimen, likely a microorganism, with a color scale from blue to red. Below the image, there are several control panels:

- Images:** A green "on" indicator, a "STOP" button, and a "Help" button.
- Exposure:** "Exposure" (set to 1), "Gain" (set to 192), and "Shutter" (set to 10).
- Trigger:** A green "on" indicator and a "Grab Mode" button.
- Rate [Hz]:** A text input field.
- Tool Box:** A panel with buttons for "BG Subtraction" (checked), "Histogram", "X & Y Spectrum" (checked), "Region of Interest" (checked), and "Camera Toolbox".
- Status:** A green "on" indicator.
- Video Mode:** "Format_0, Mode_6: 640x480 Mono 16bpp".
- Image Parameters:** "Bits per Pixel: 16", "Height: 480", "Frame: 537472", "ImagePoints: 307200", "Width: 640", "7.5 fps".

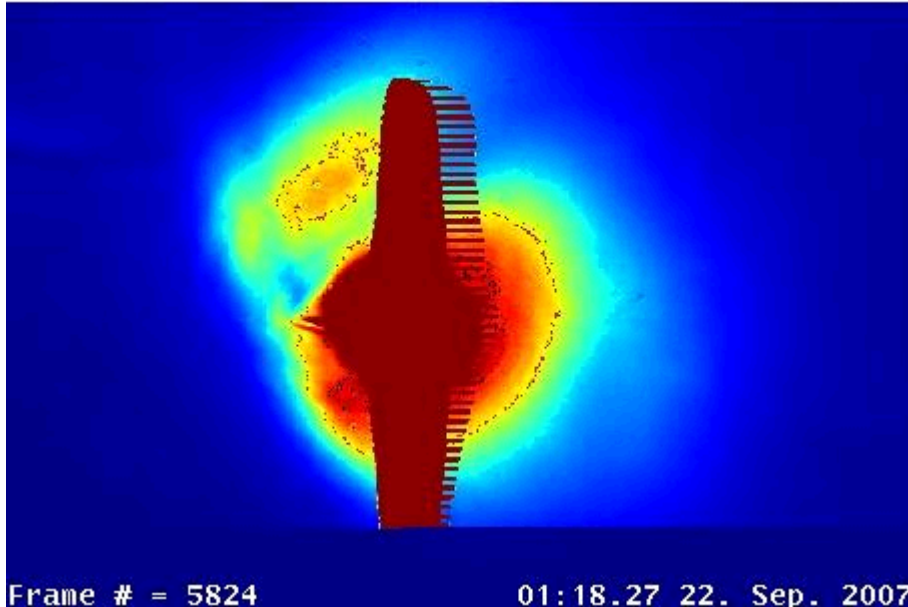
“The camera is saturated. We'll try to decrease the micro bunching by reducing the laser intensity.”

ORS-Team, Monday 29. October 2007 Night

Screen 5SEED

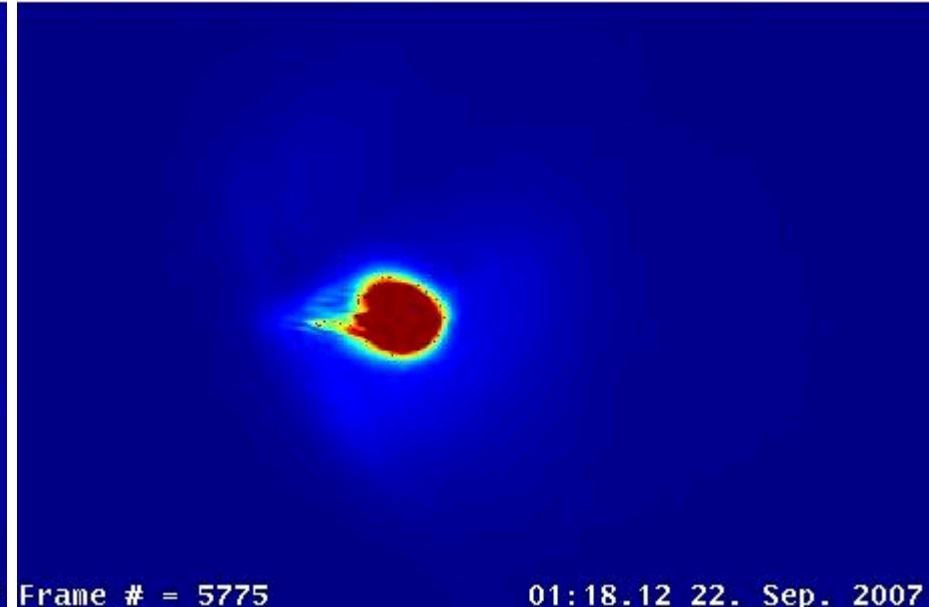
Active Screen Location:

5SEED



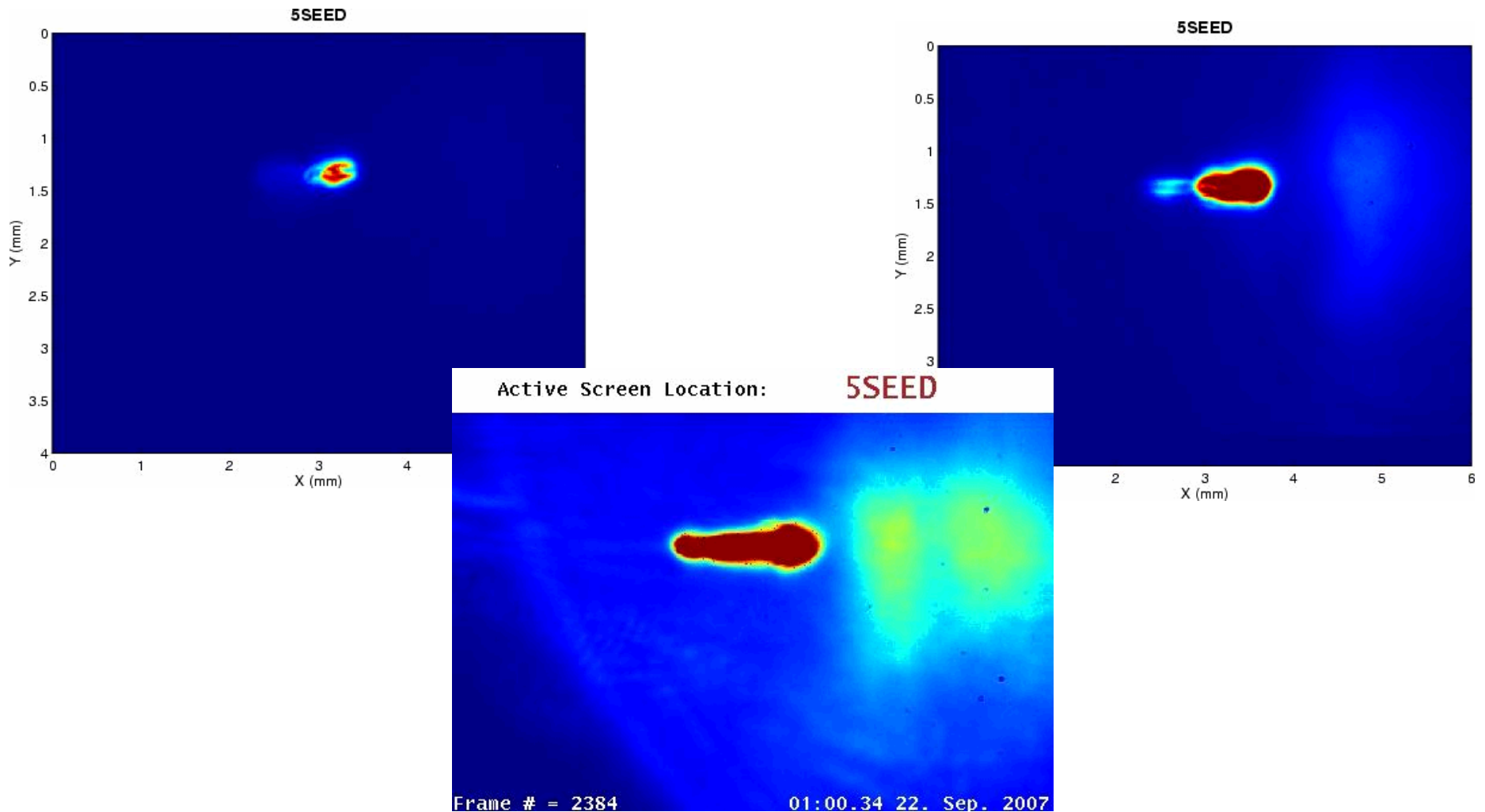
Active Screen Location:

5SEED



- ORS chicane at 0, replica laser off
- SASE compression: 8° ACC1, Pyro 9DBC2 ≈ 70 mV, -10° ACC2
- Camera: OTR1, magnification 1, gain 0, brightness=0, shutter 1

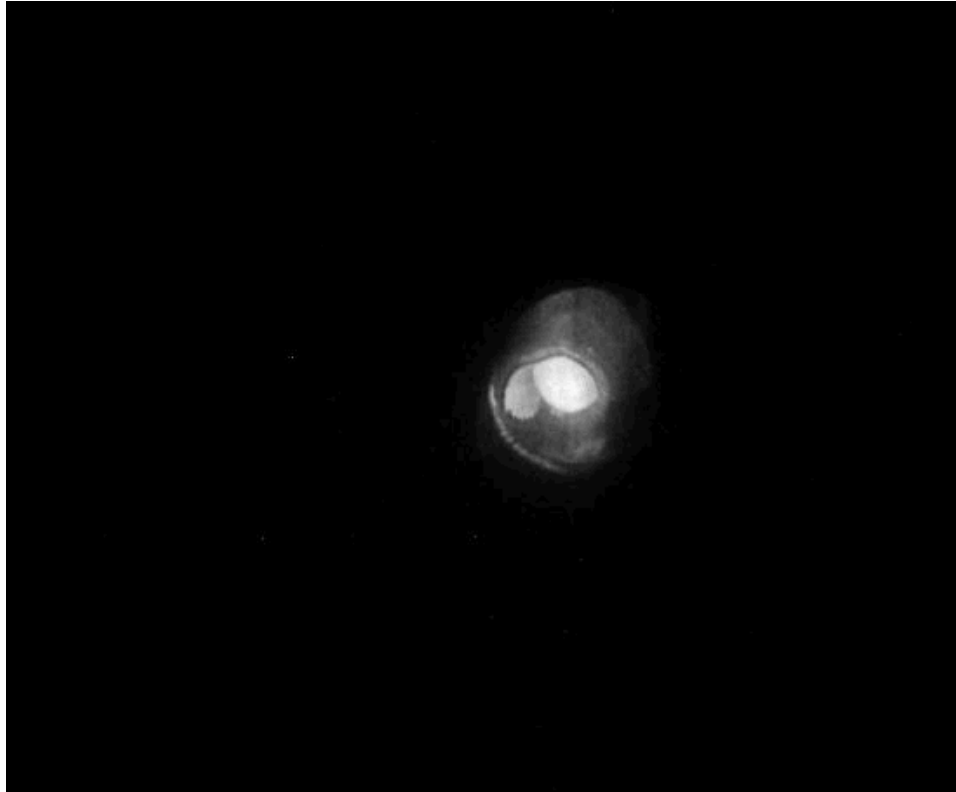
E. Schneidmiller, Friday 21. September 2007 Night



- ORS chicane -3 A, replica laser off
- SASE compression

Images strongly fluctuating; at on-crest image weak and stable

ICCD at IR undulator beam line



- Infrared undulator off
- SASE compression

Intensity strongly fluctuates. On-crest intensity stable.

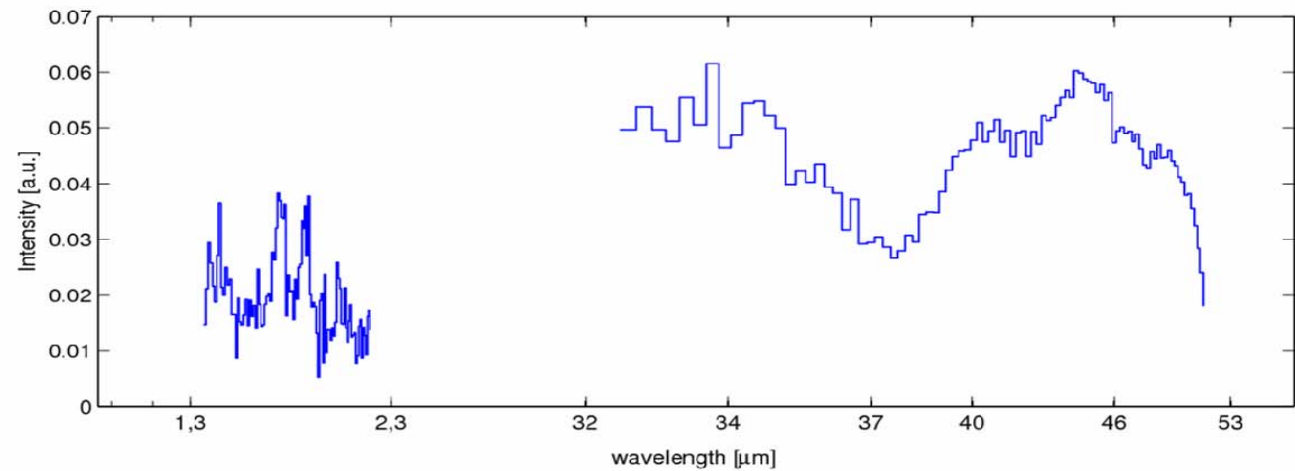
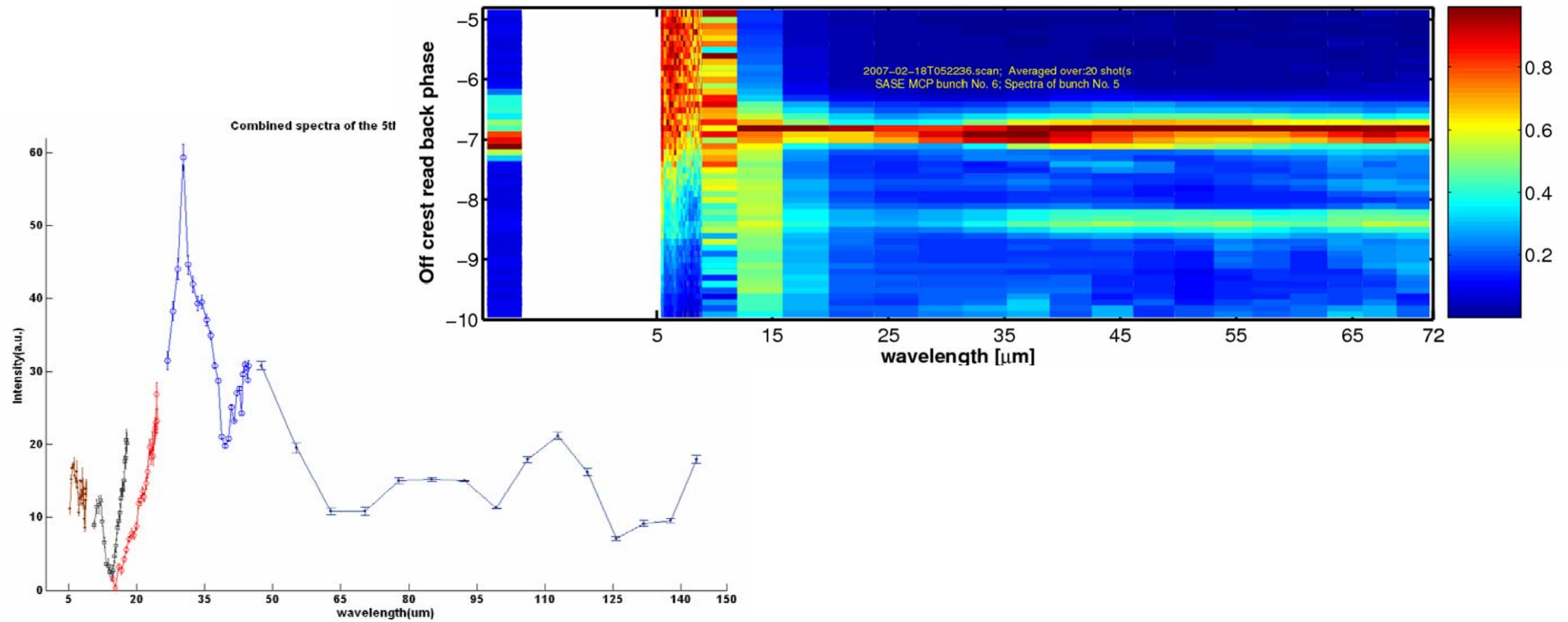
Friday 21. September 2007 Night

At CR140m beam line?

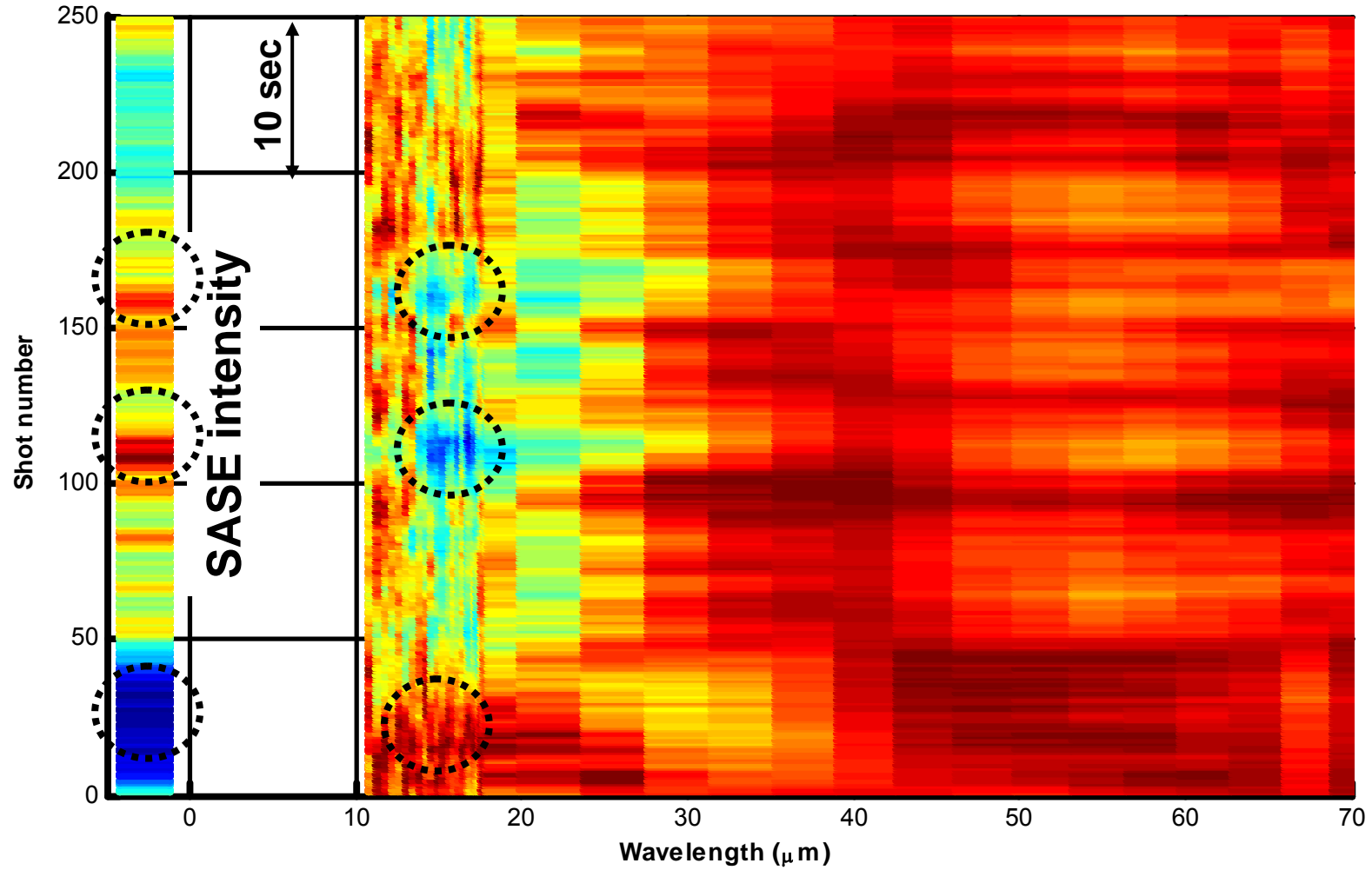
'Twinkling' observed when observed by eye

→ Small, high intensity spots with unstable position

Short wavelength spectroscopy



SASE (Anti-)Correlations



How to proceed?

Intensity studies with OTR

Band-pass filters in visible (could be installed instead of current grey filters)
Dependence on phase, charge, beam size, ...

Spectroscopy

CR140m beamline
Infrared undulator
BC3 SR setup?

