Update on Analysis and Simulations of Beam Tilt Measurements in BC2
- Part 1 -

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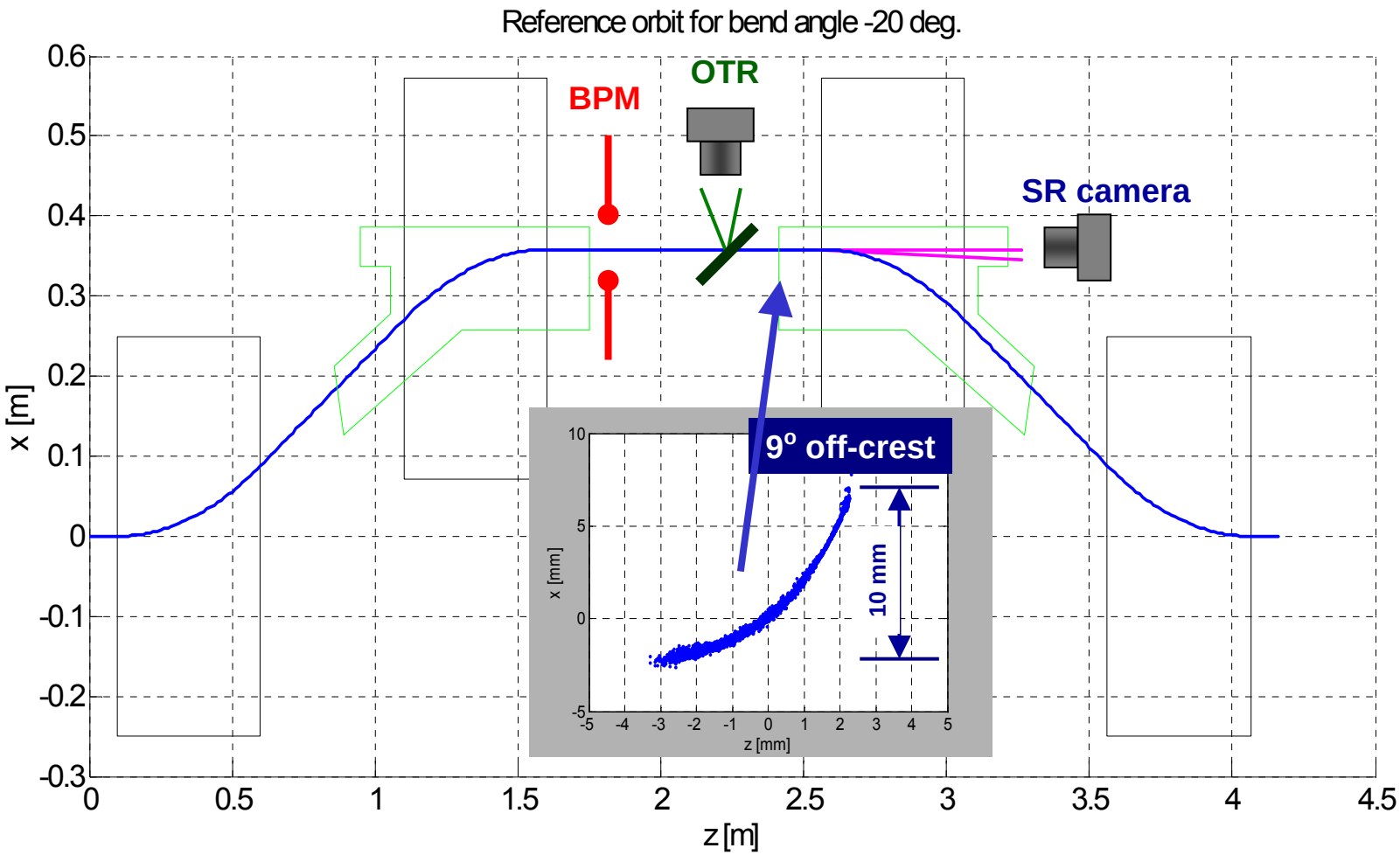
Outline

1. Introduction / Experimental Setup
2. On-crest operation
3. Bunch tilt measurements

1) SR Camera Measurements

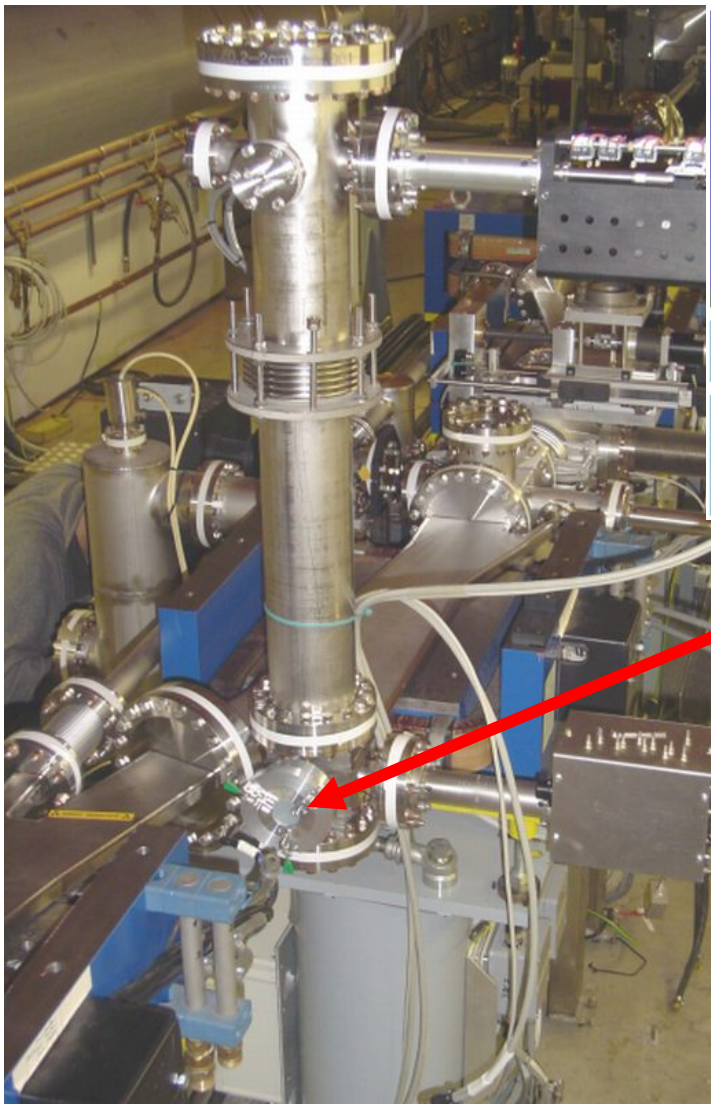


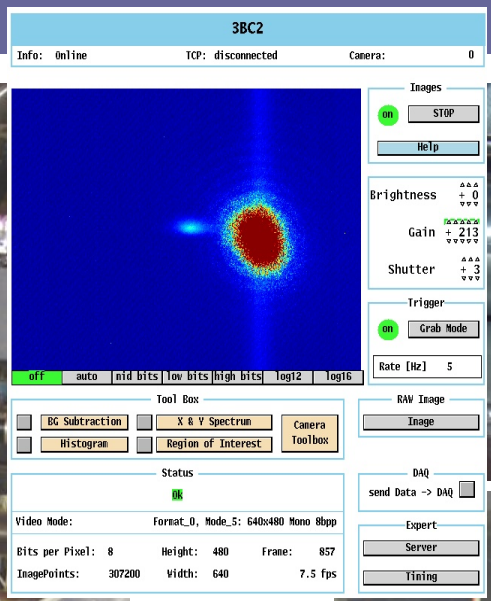
Horizontal position of the electron beam is related to the beam energy

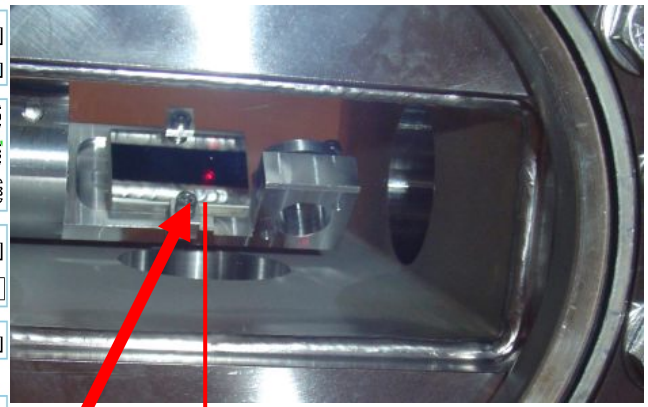
$x = R_{16} * \Delta E/E$ ($x = 10$ mm $\cong \Delta E/E = 3\%$)

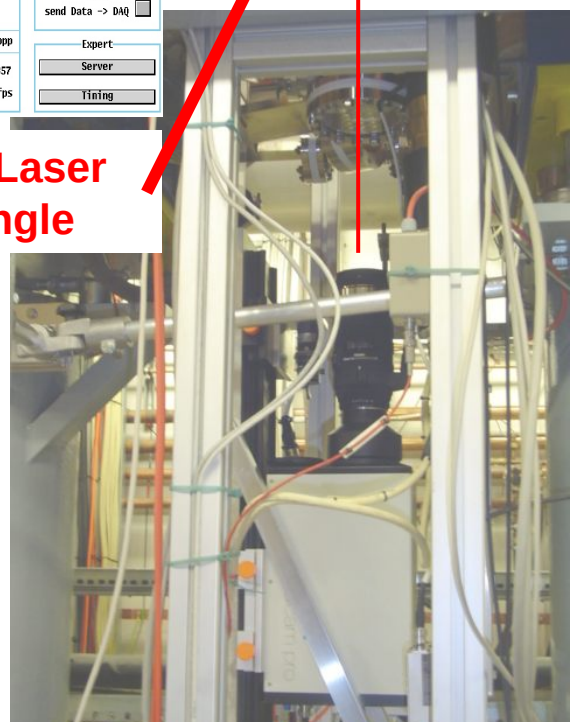
At location of SR camera bunch appears as if ‘streaked horizontally’

1) New SR Port and Camera





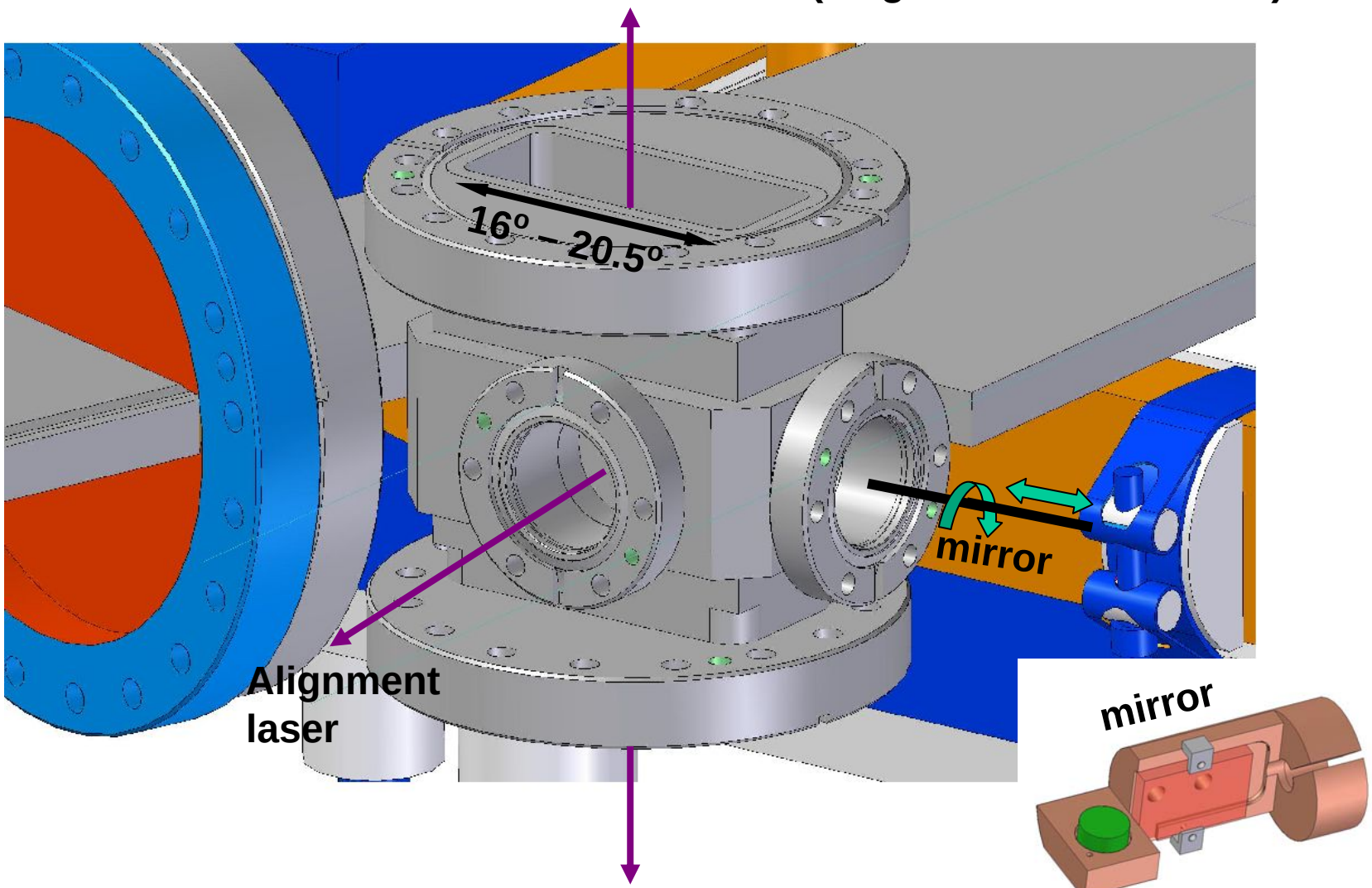




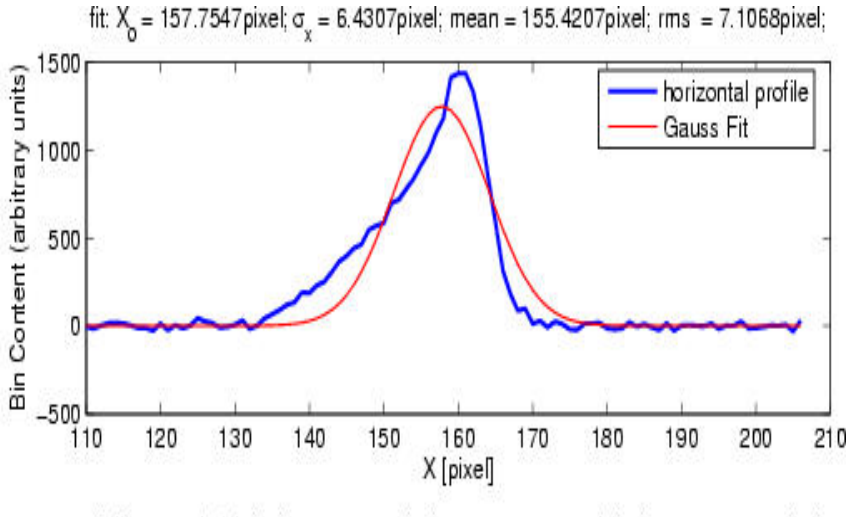
Alignment Laser
18º bend angle

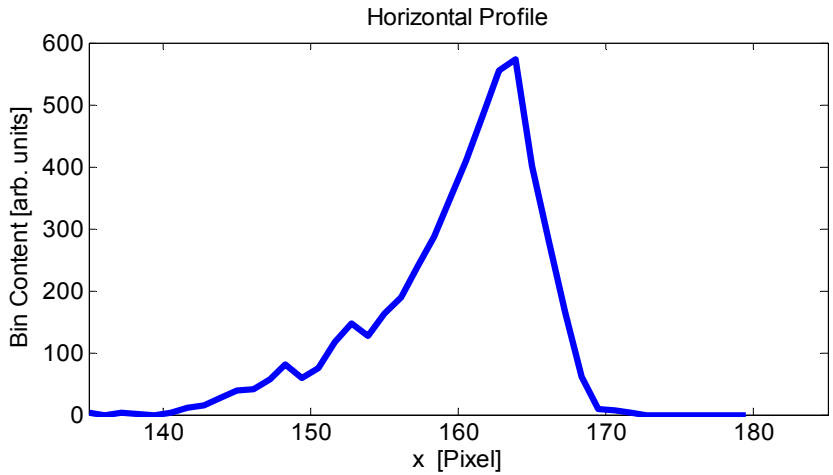
Movement of mirror and camera needs to be automated

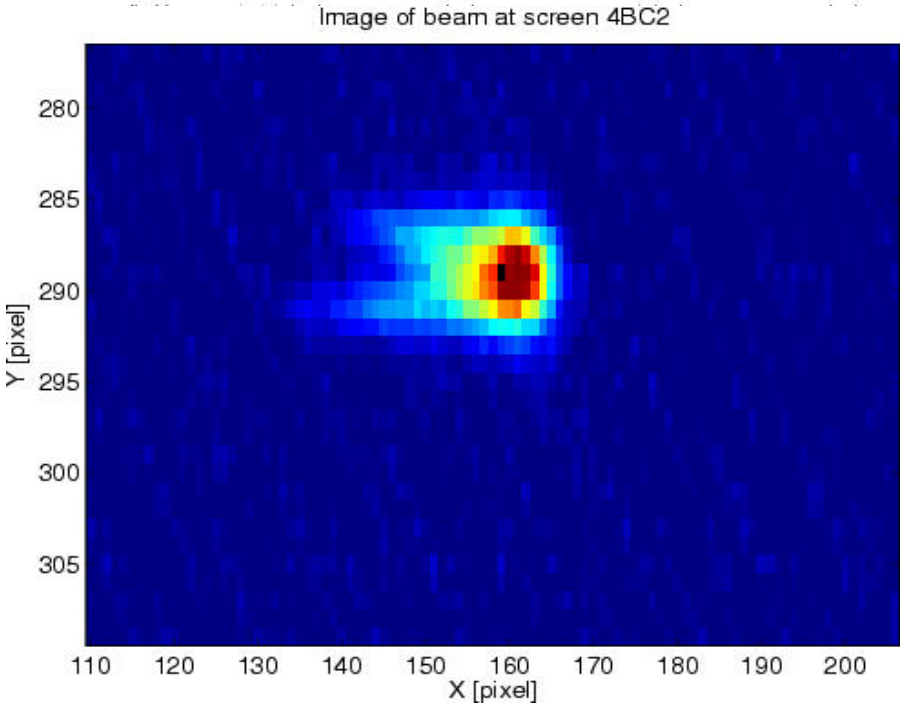
1) Layout New SR port



2) On-crest





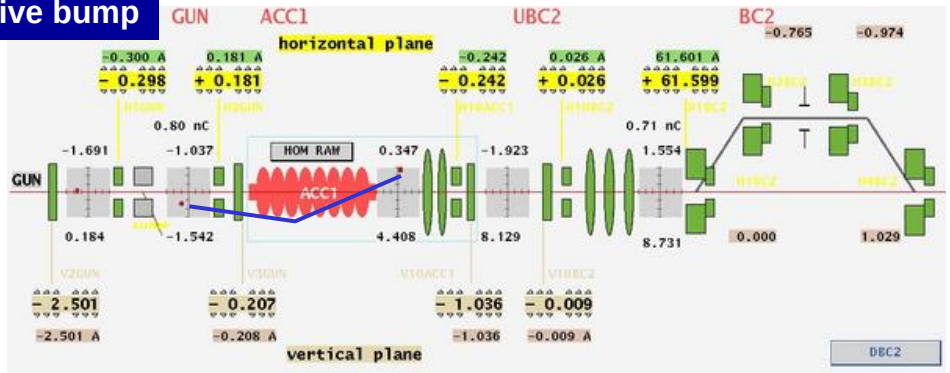


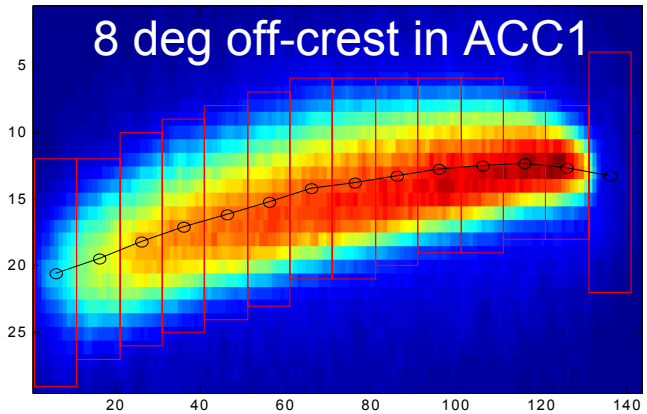
Simulation:
Off-crest phase: 2deg

Image of old test camera:
Pronounced C shape!

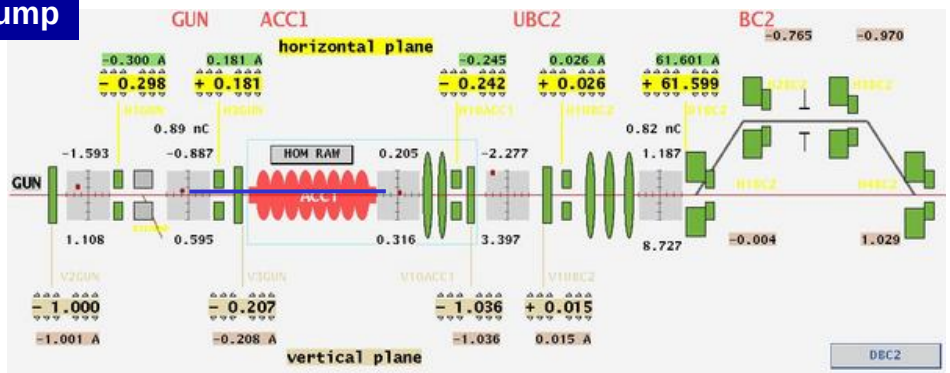
3) Tilt Measurement: Data Evaluation

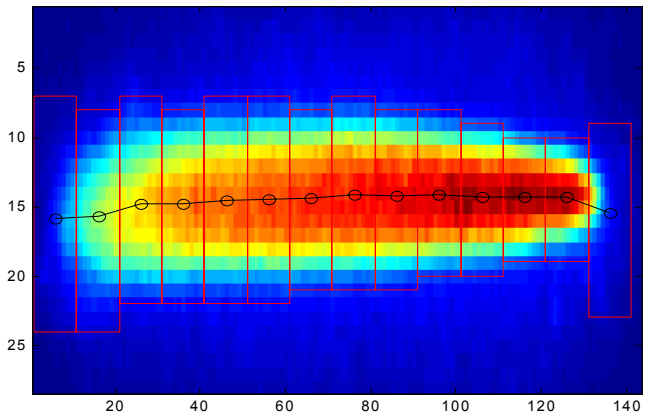
Positive bump



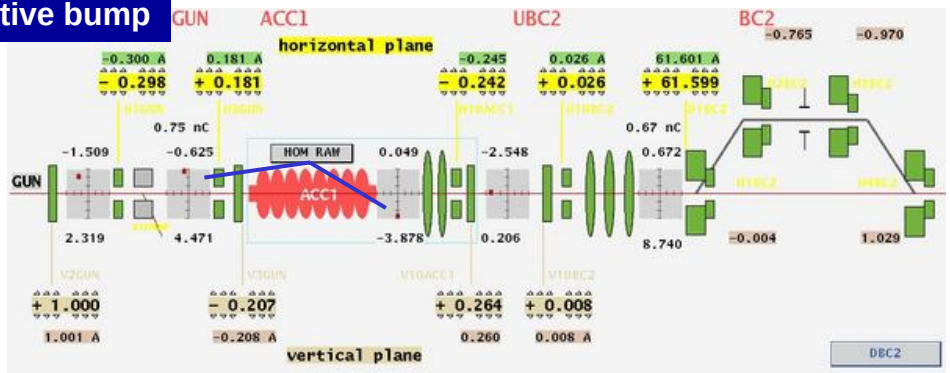


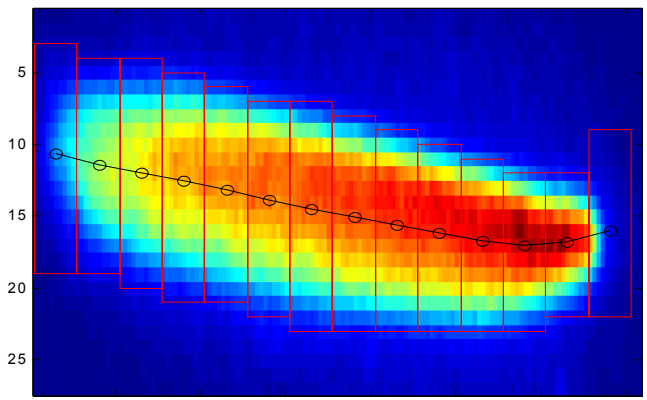
No bump





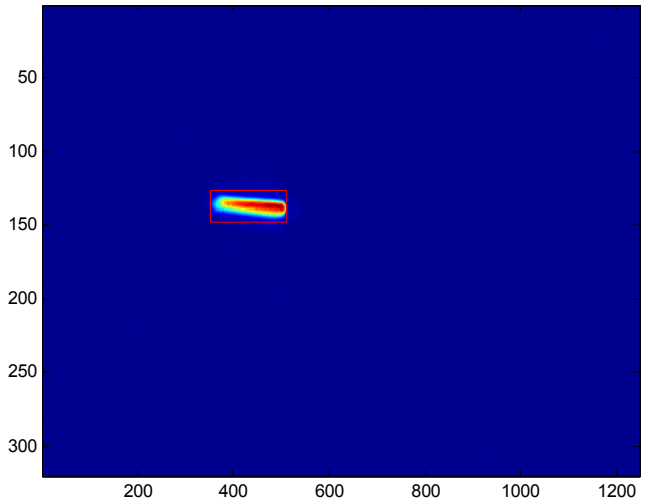
Negative bump



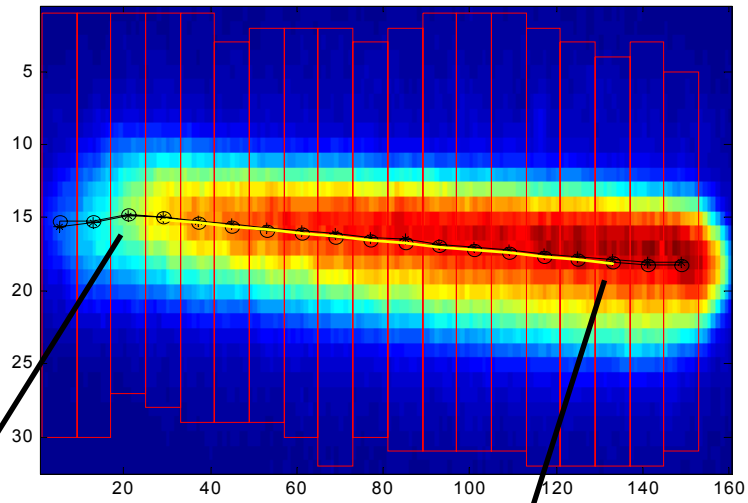


3) Tilt Measurement: Data Evaluation

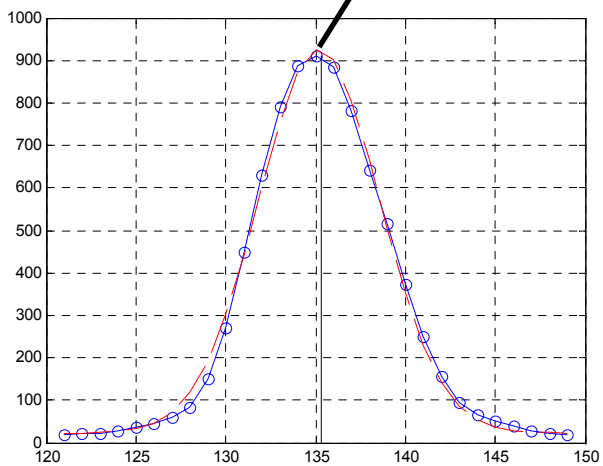
Step 1) Find region of interest

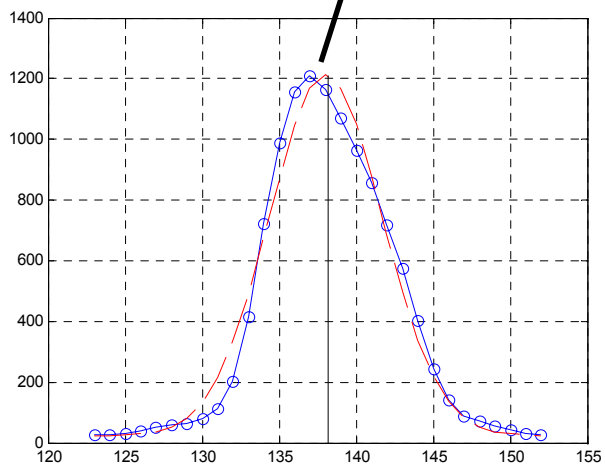


Step 2) Find region of interest



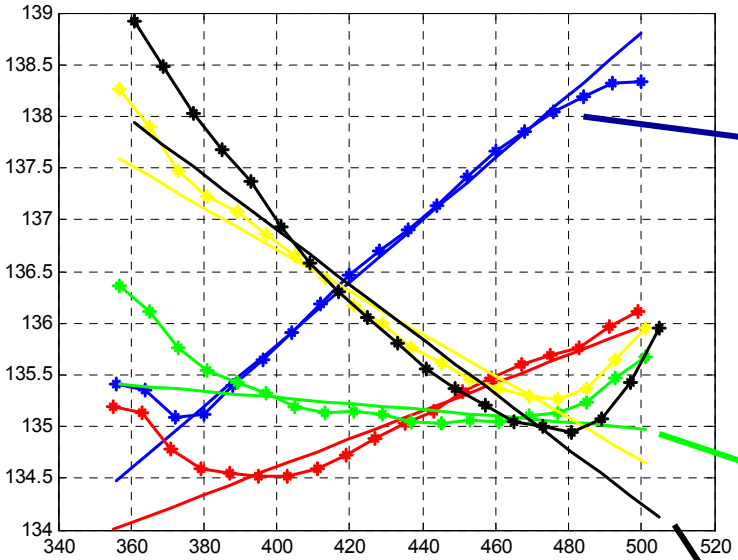
Step 3) Find slice centre

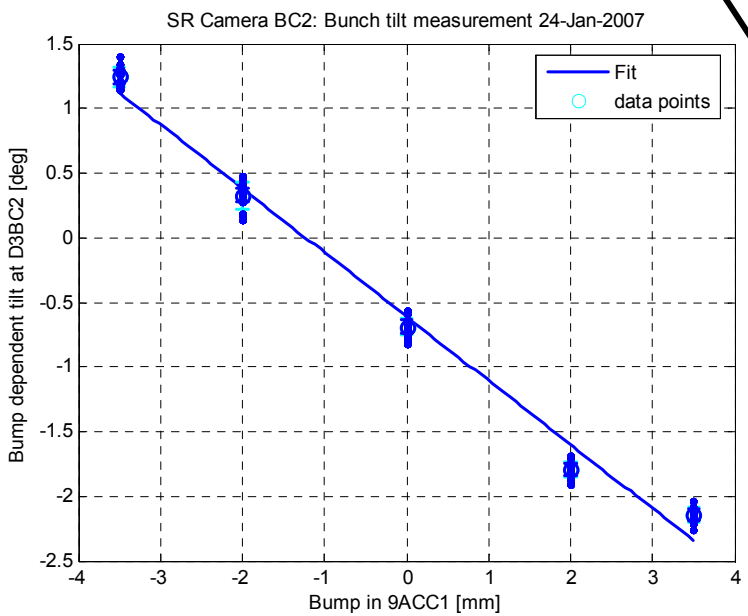


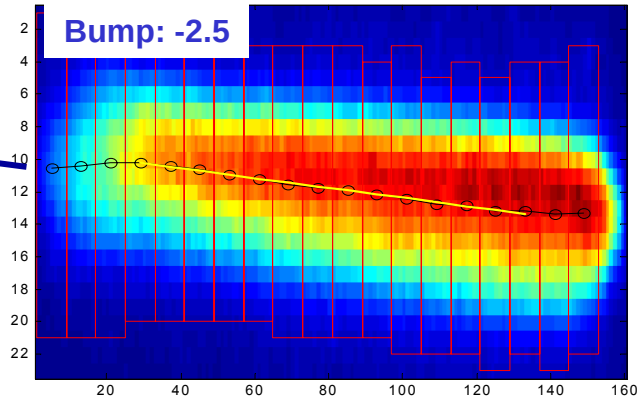


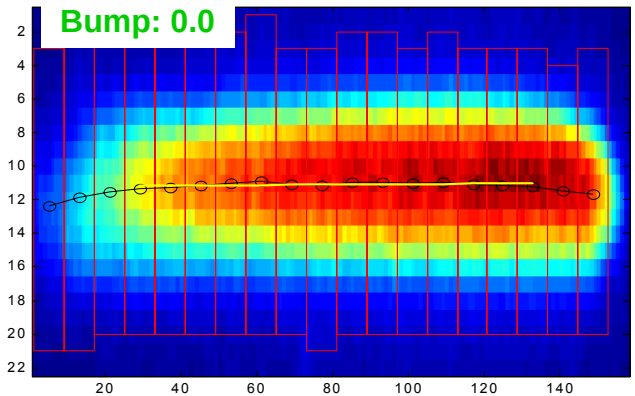
Step 4) Linear Fit of slice centers gives tilt

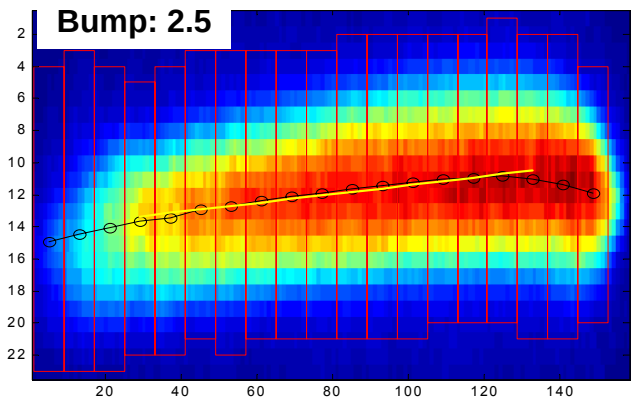
3) Tilt Measurement: Data Evaluation





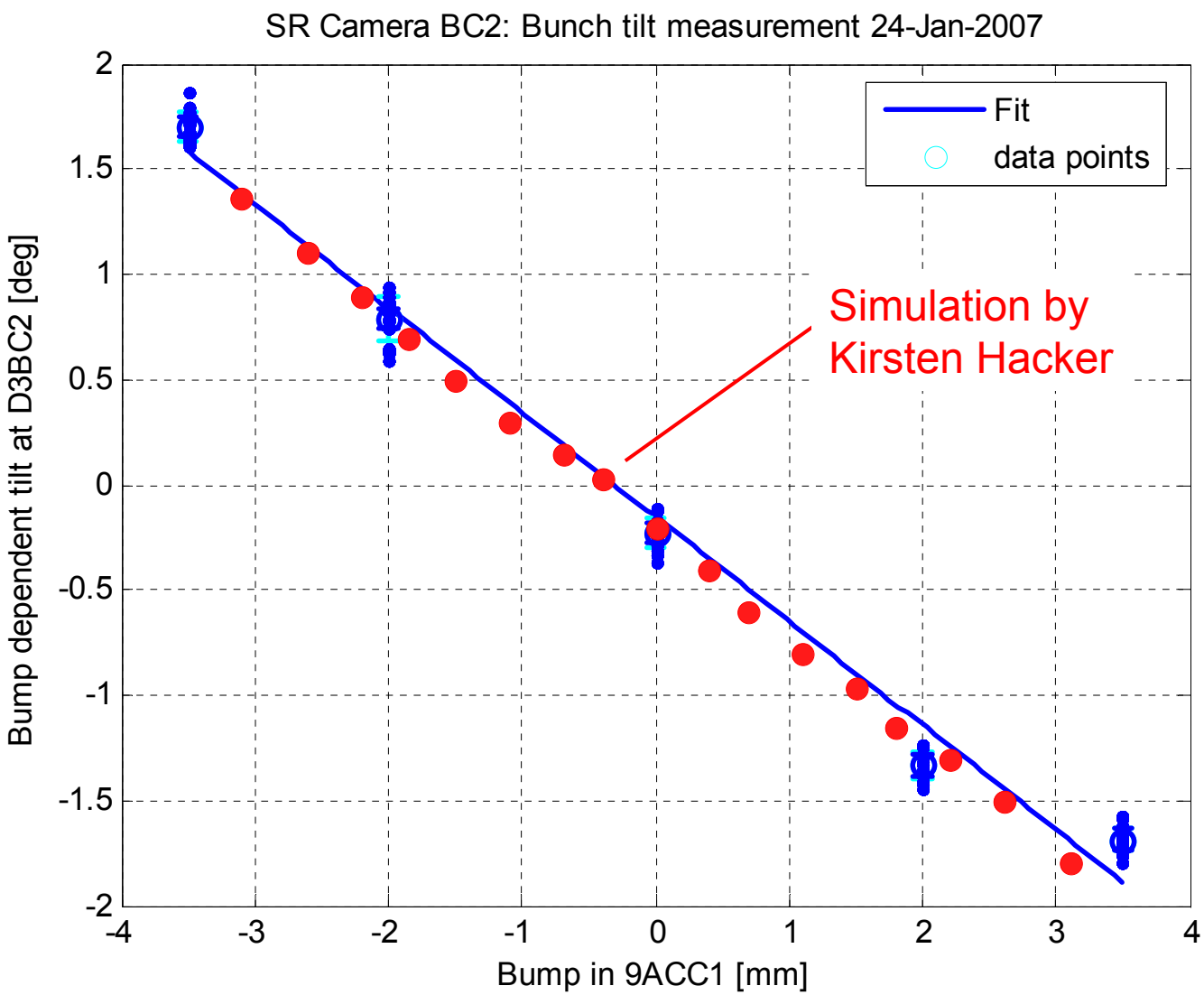






3) Tilt Measurement: Data Evaluation

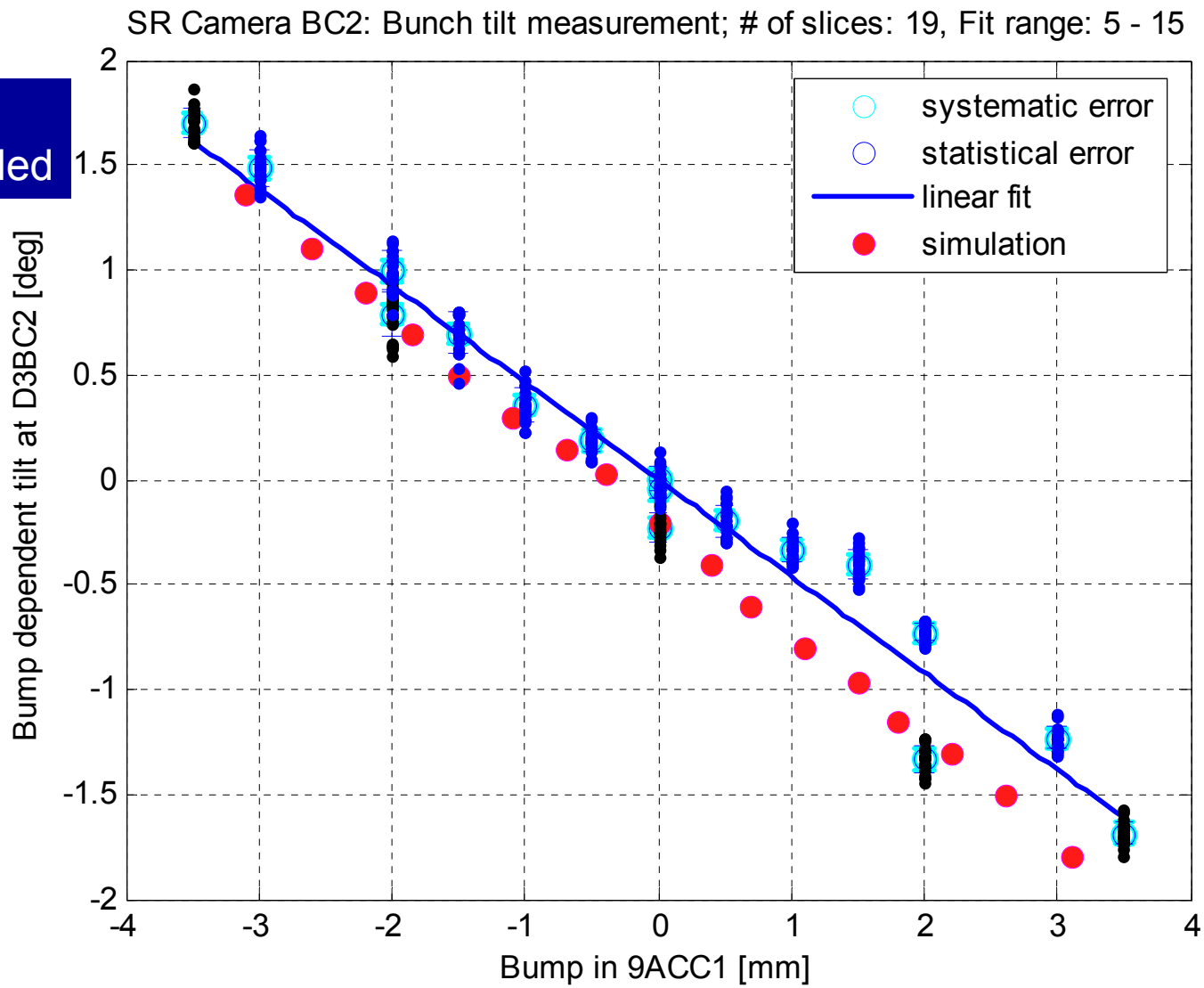
Raw data



3) Tilt Measurement: Data Evaluation

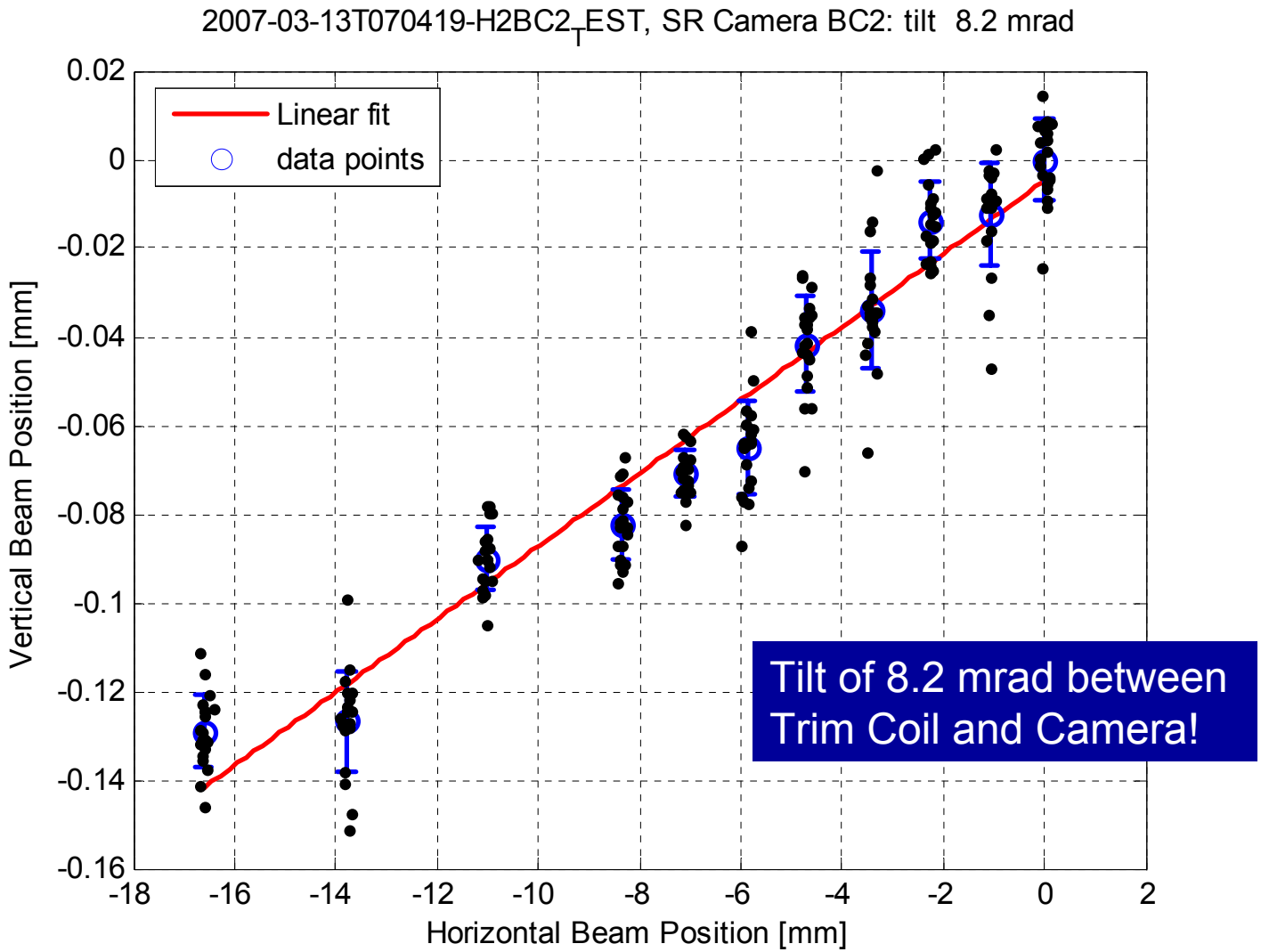
Raw data!

Measurement of 20/02/2007 included



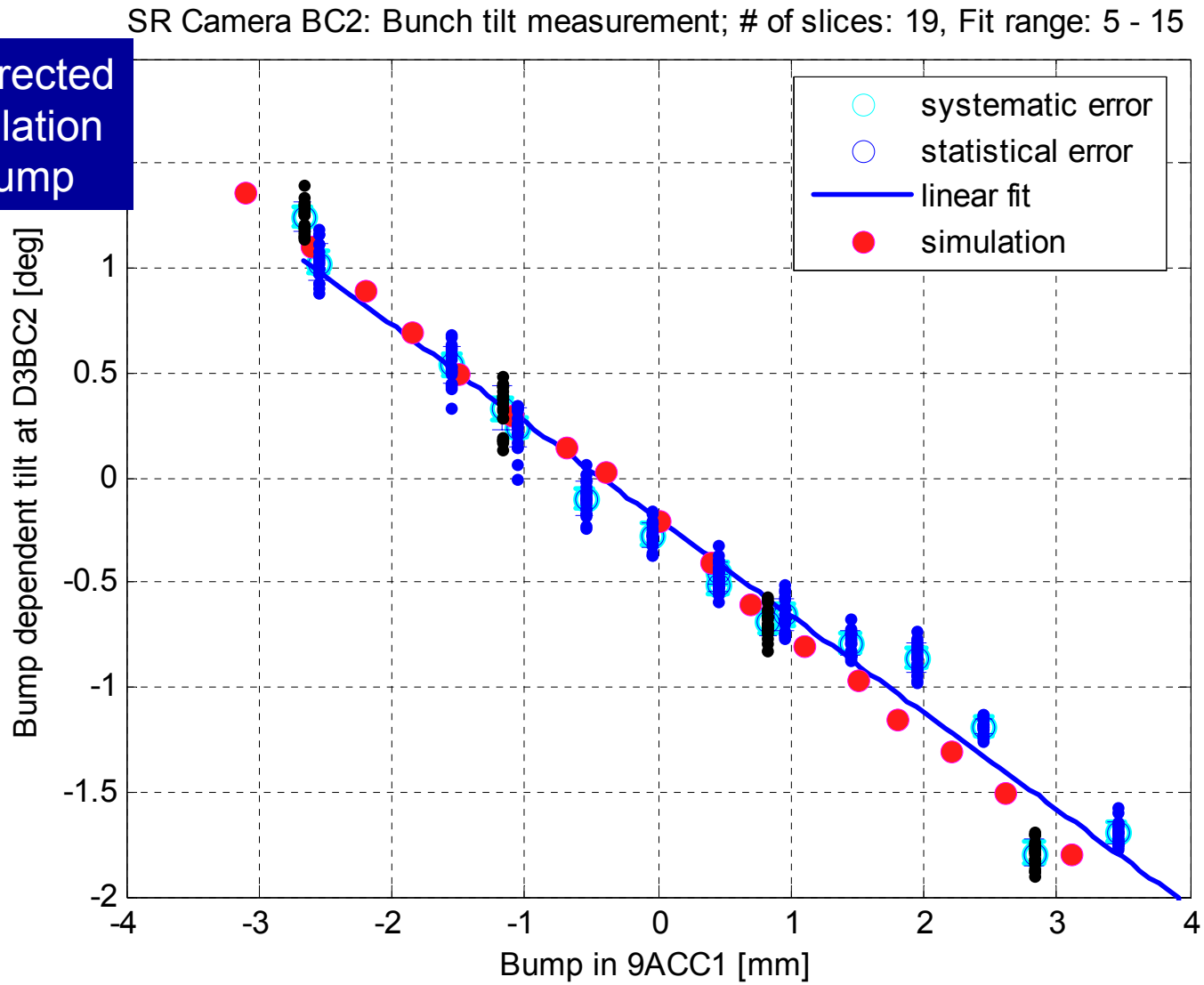
3) Measurement: Camera Tilt

Trim coil H2BC2 used to steer the beam horizontally

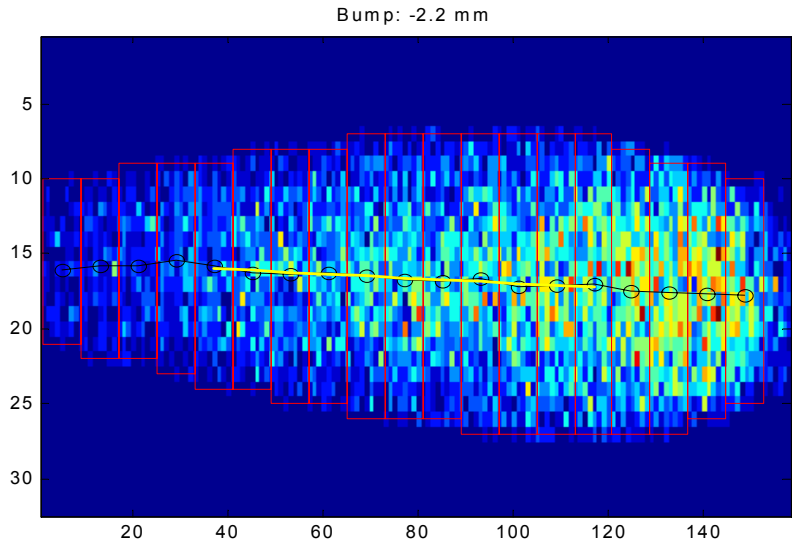


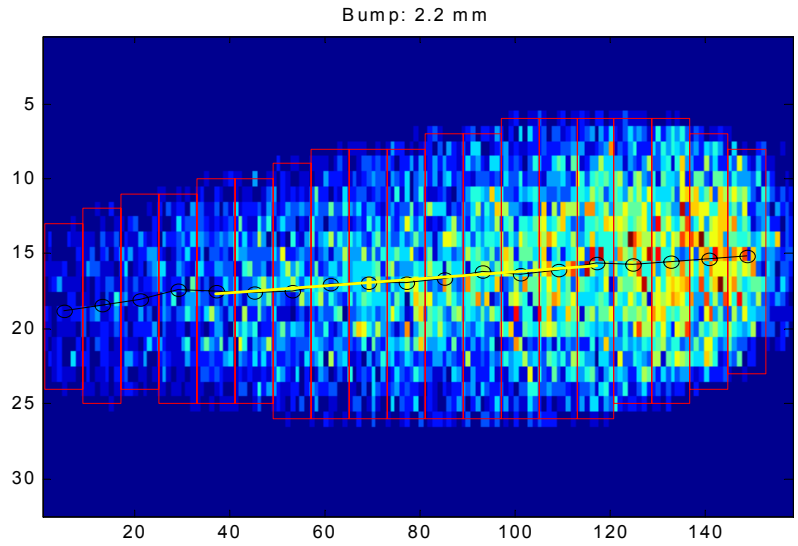
4) Tilt Measurement: Comparison with Simulation

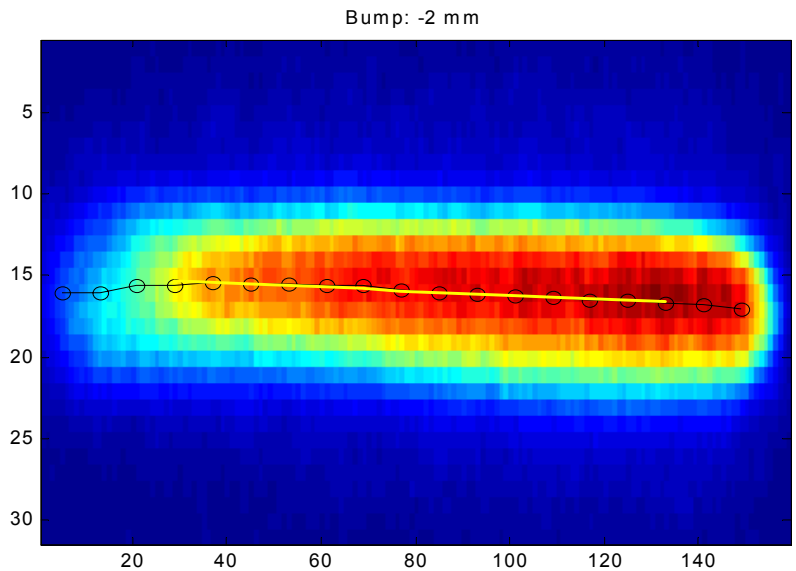
1) Camera tilt corrected
2) Shifted to simulation
Result at 0 mm bump

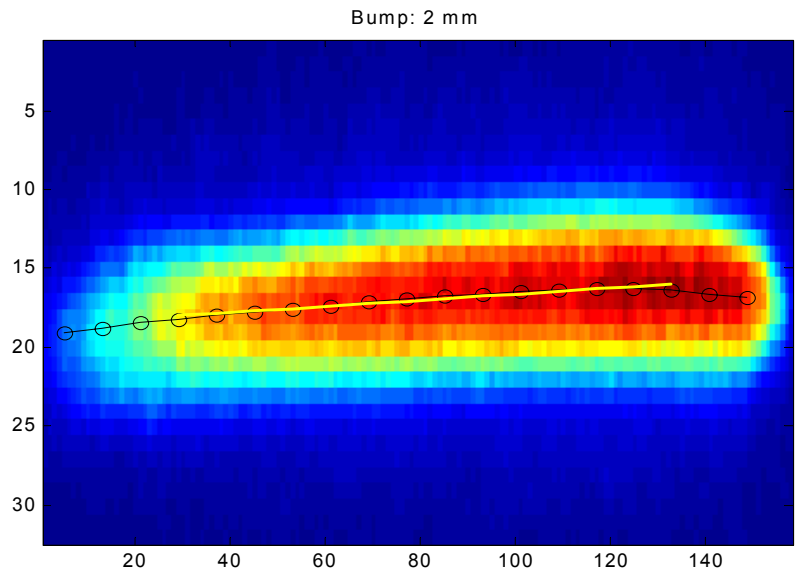


4) Tilt Measurement: Comparison with Simulation



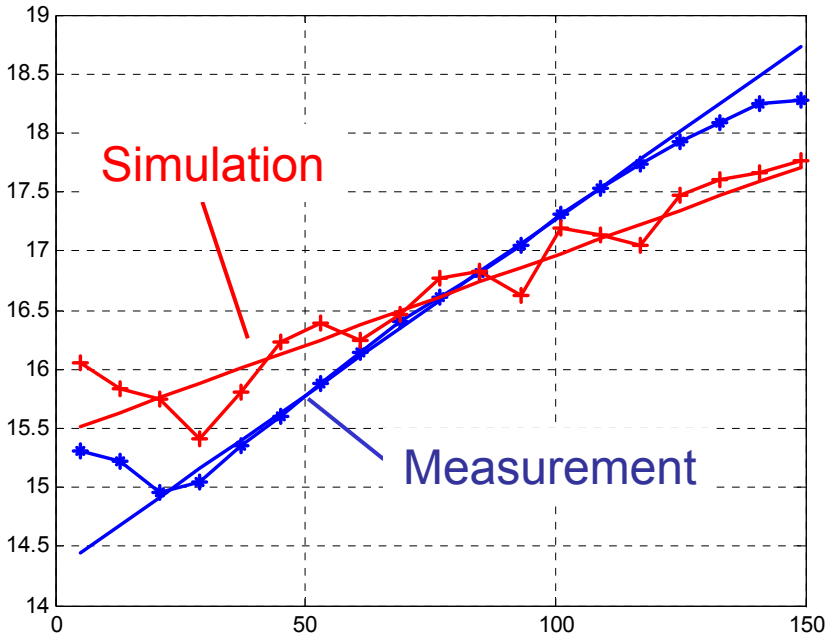
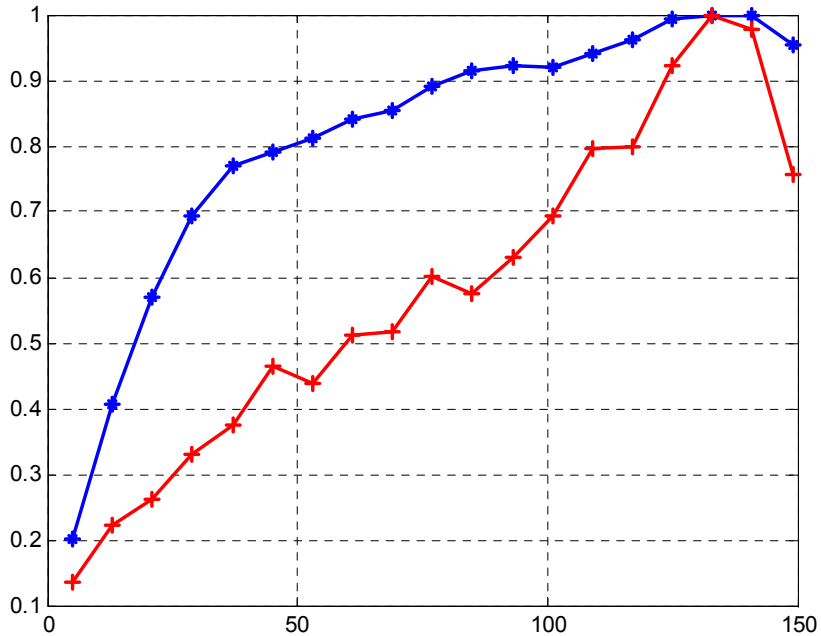






4) Tilt Measurement: Comparison with Simulation

Tilt



Intensity Profile