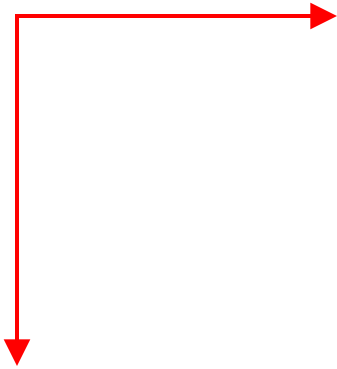
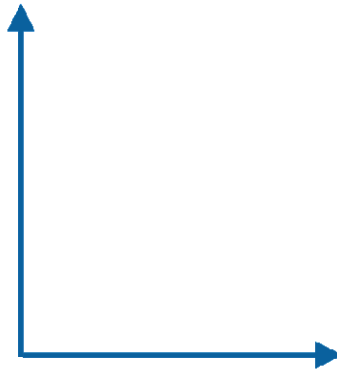


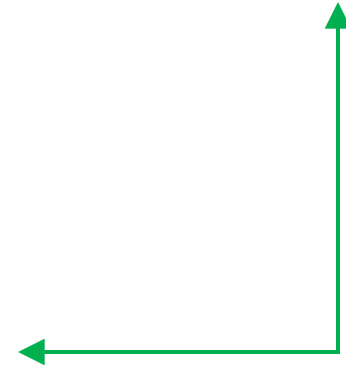
“Matrix” & “PITZ” coordinate systems



Matrix CS



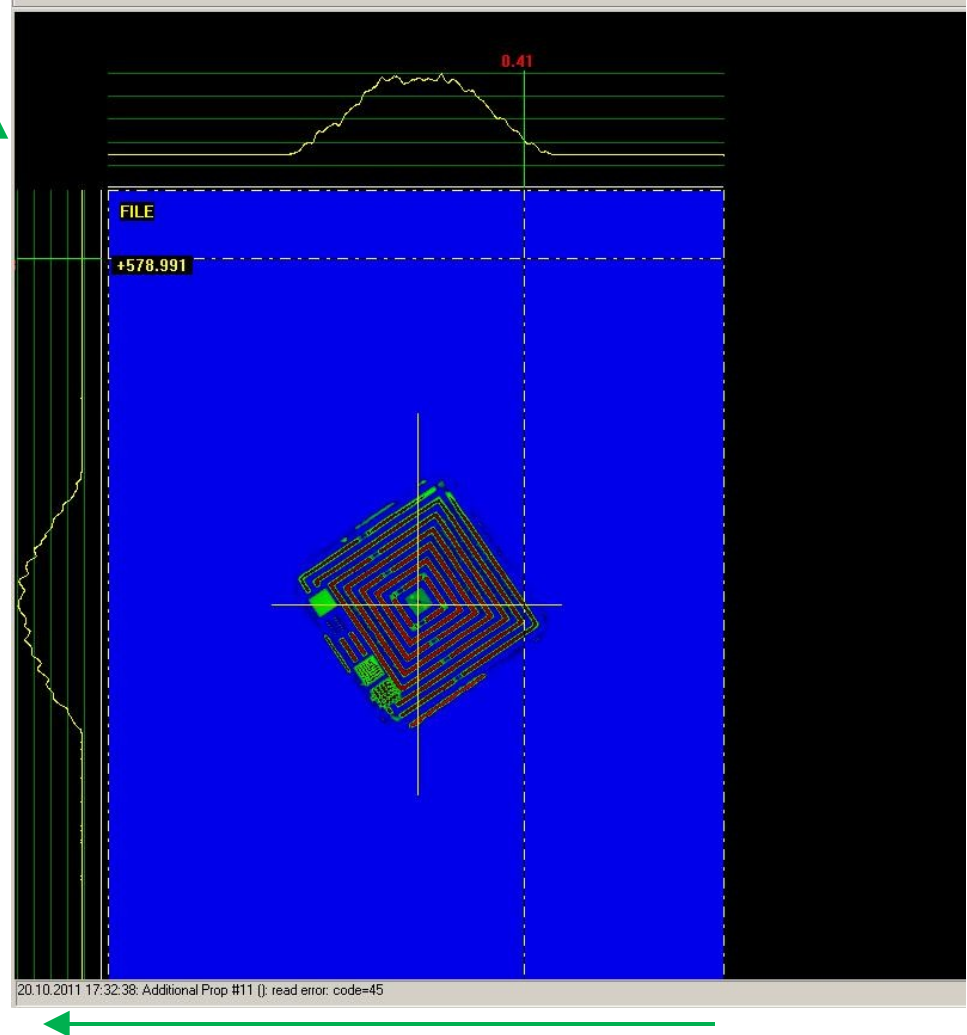
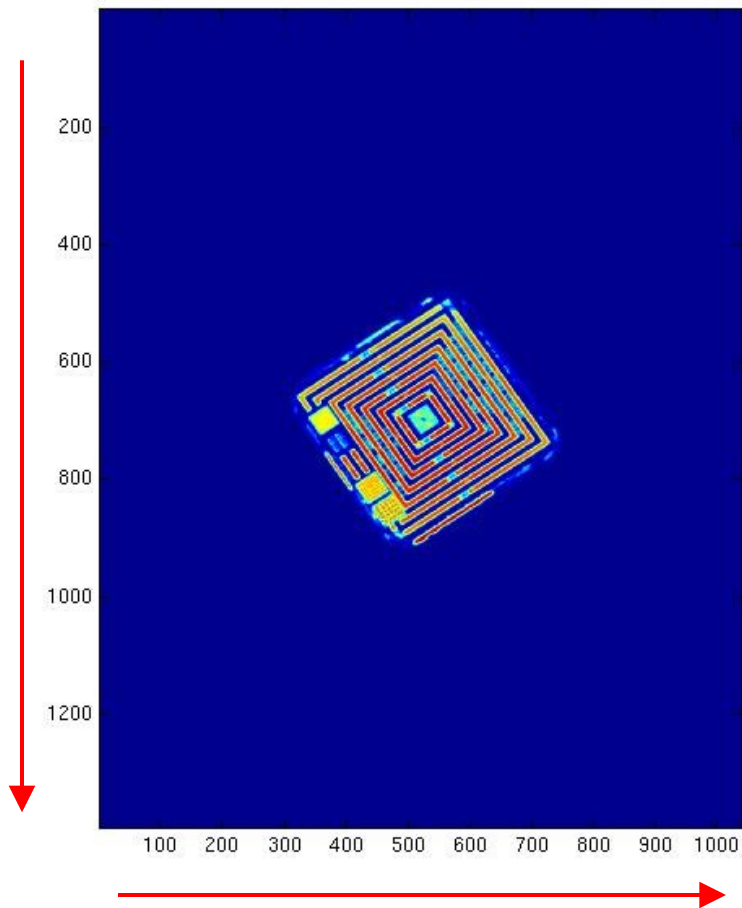
2D Cartesian CS



PITZ CS

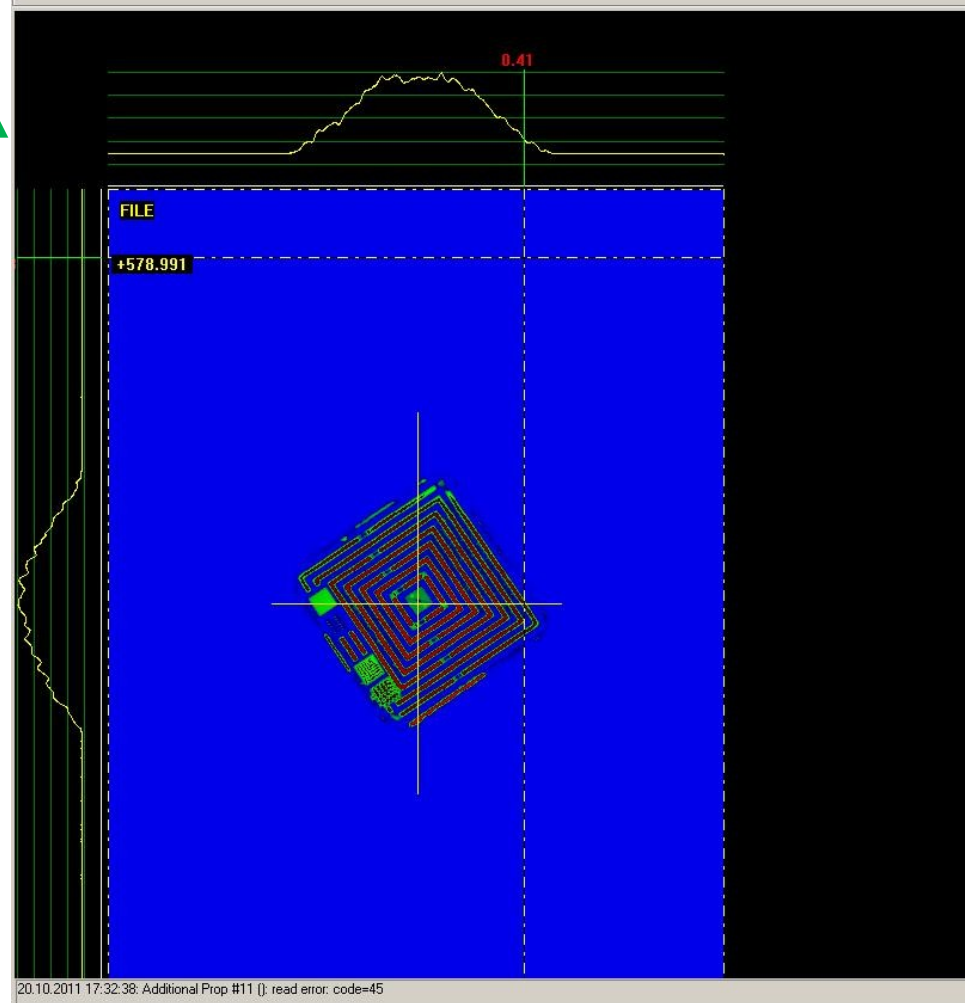
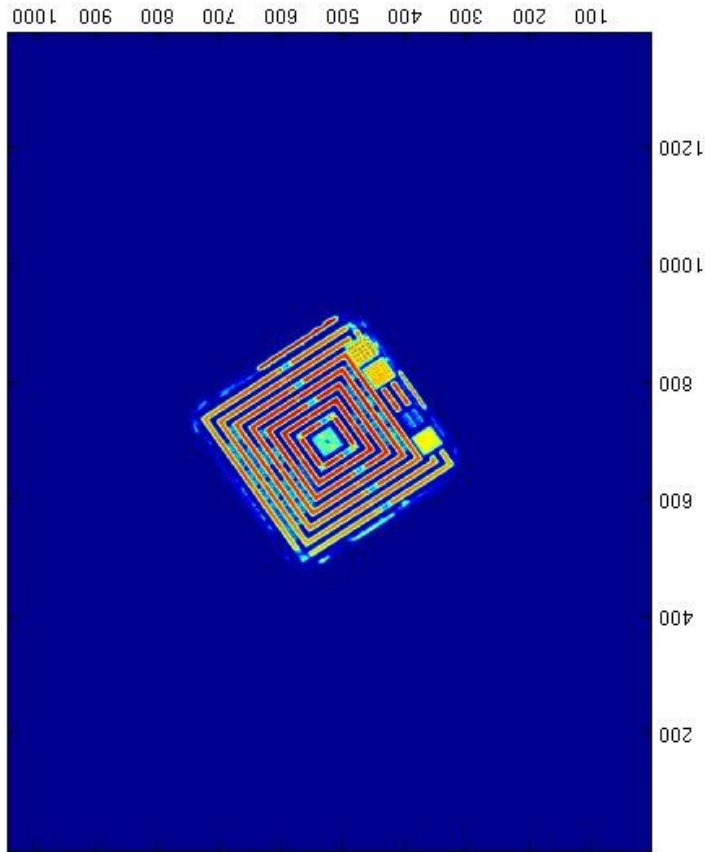
Loading Pictures I.: No Treatment

```
rImage = video_read_imc_file(FileName)
```



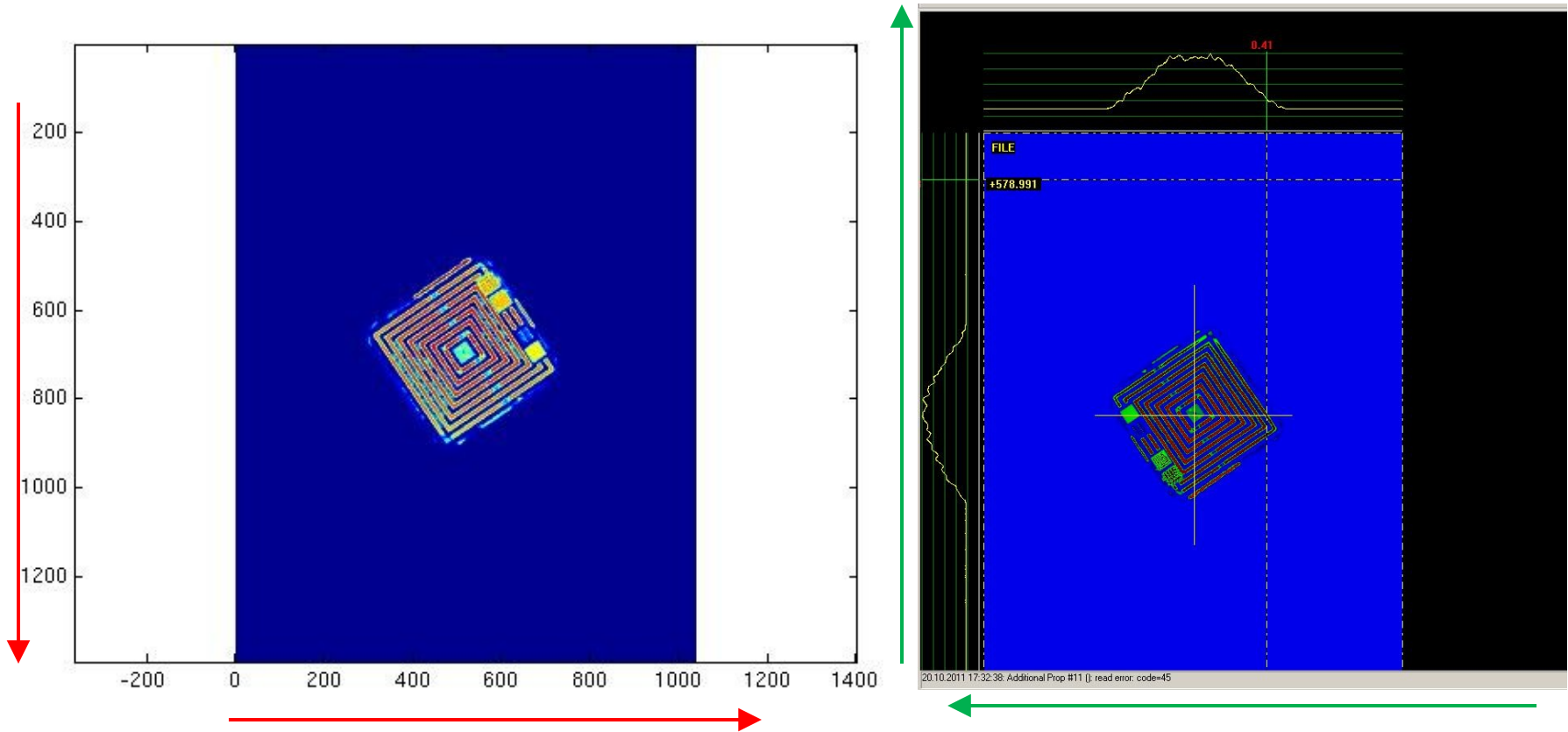
Loading Pictures I.: No Treatment

```
rImage = video_read_imc_file(FileName)
```



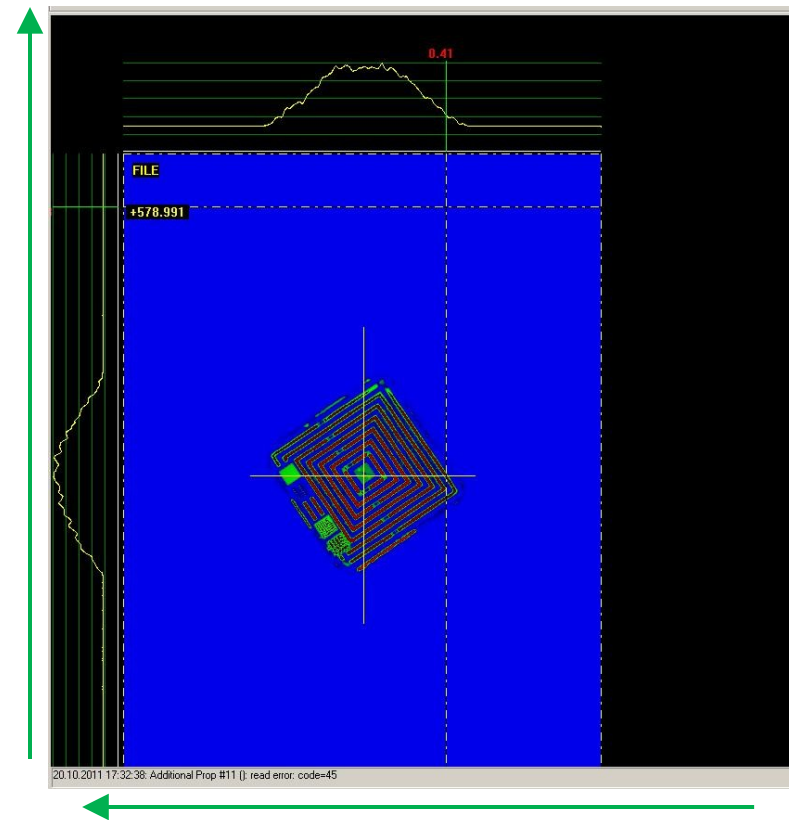
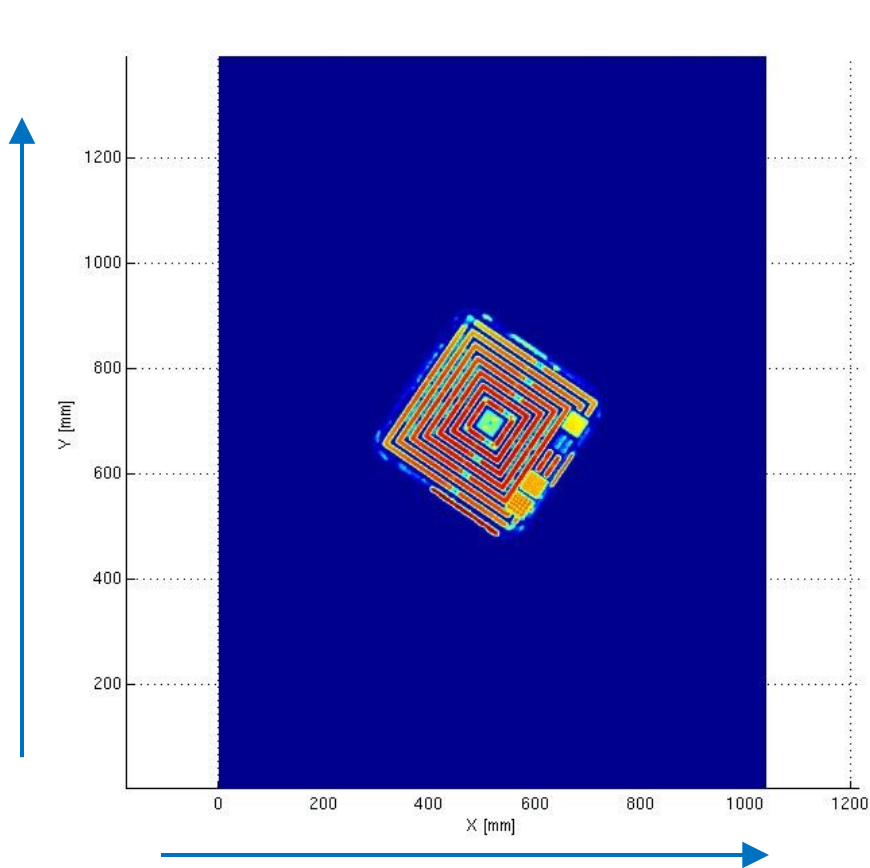
Loading Pictures II.: Adapted to PITZ CS

```
rImage = readnflip(FileName)
```



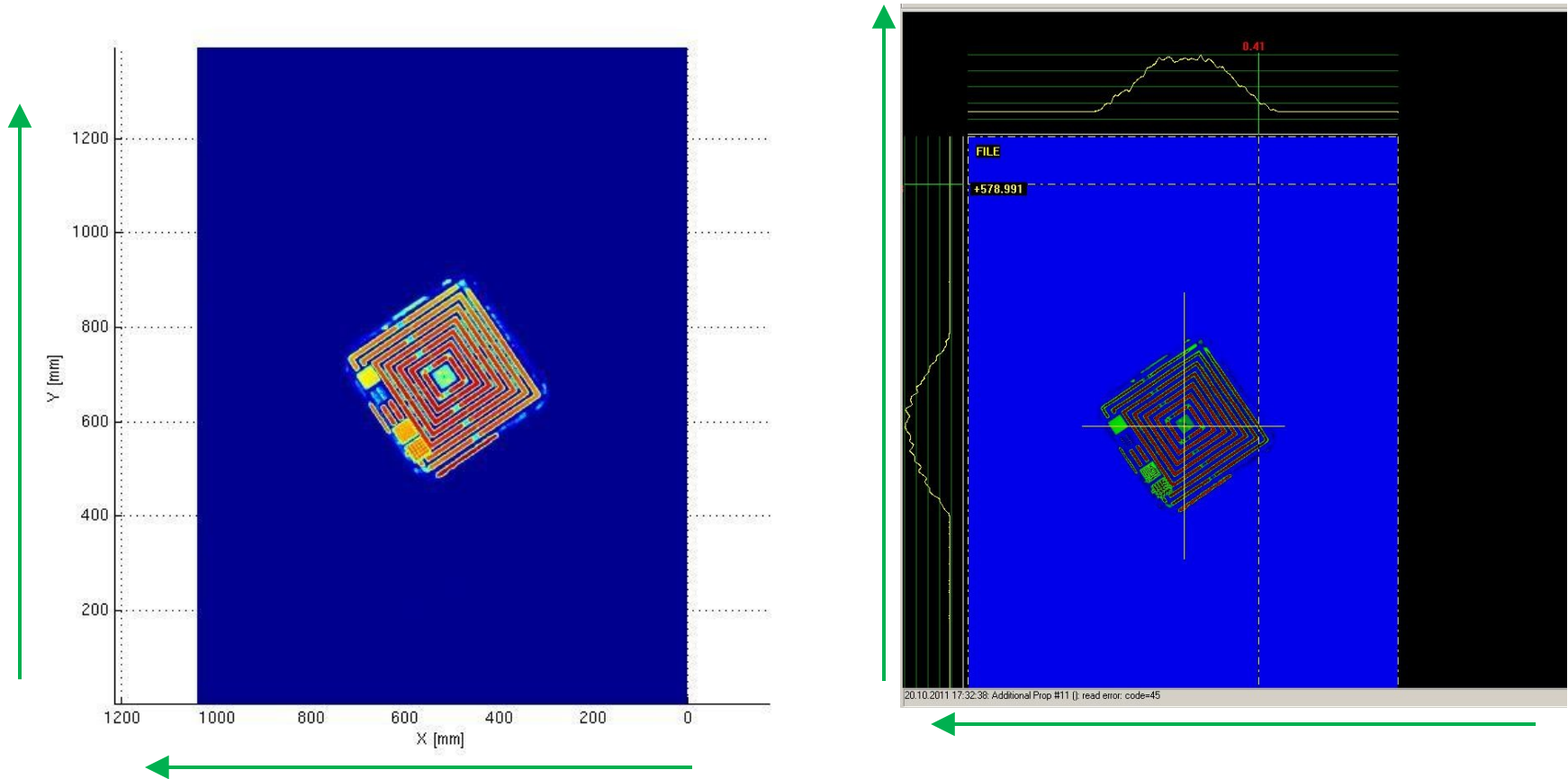
Loading Pictures II.: Adapted to PITZ CS

```
rImage = readnflip(FileName)
```




Loading Pictures II.: Adapted to PITZ CS

```
rImage = readnflip(FileName)
```



MK: Phase space reconstruction: summary

- Step 1:
 - Horizontal centering of the phase space

() where  Actuator movement correction

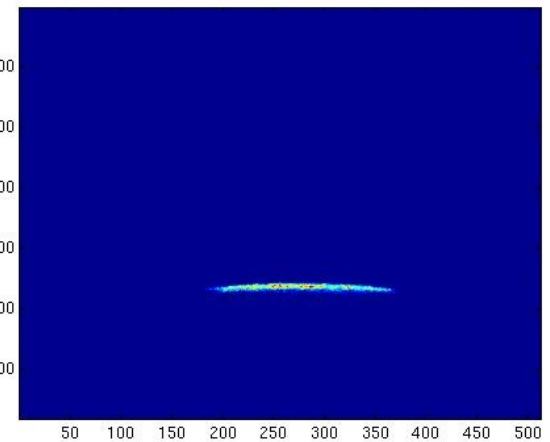
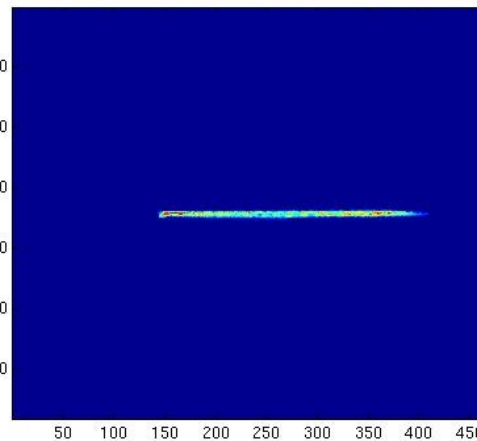
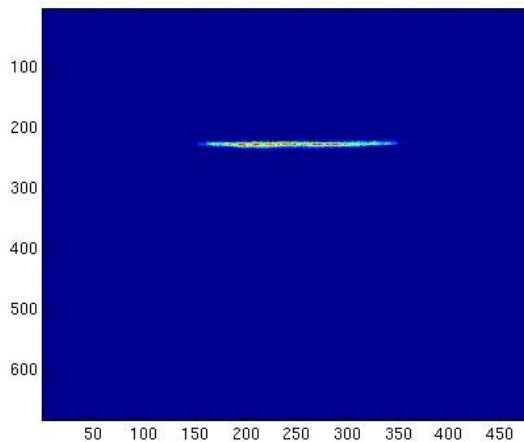
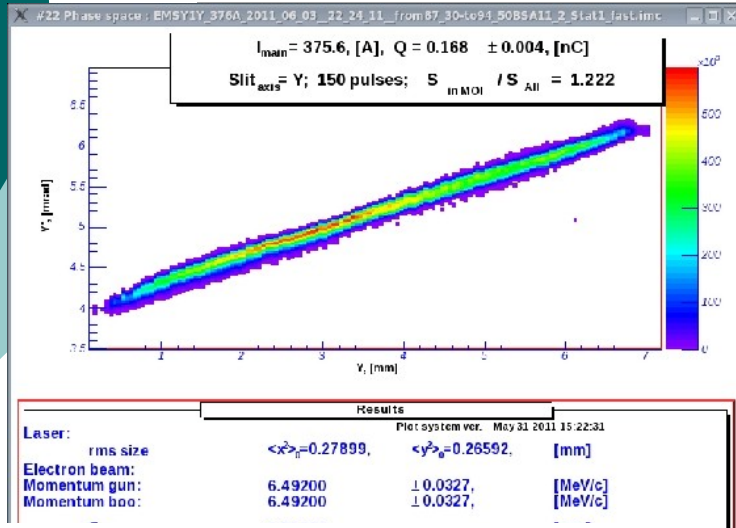
- Step 2:
 - Vertical centering of the phase space

$\frac{(\langle \rangle)}{\text{_____}}$ where _____, _____
 () ( () ().

- Step 3:
 - Interpolating (extrapolating) of each beamlet profile () over the unique (for all beamlets) divergence grid .

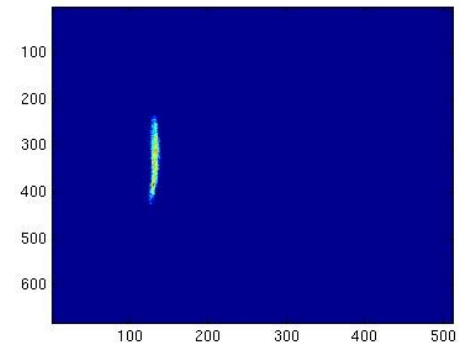
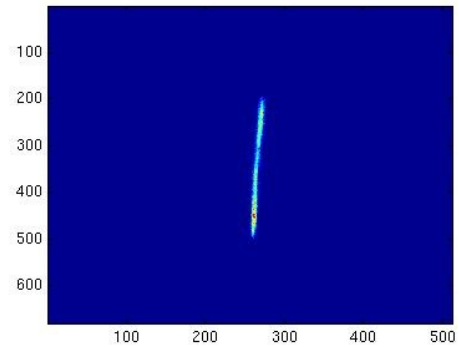
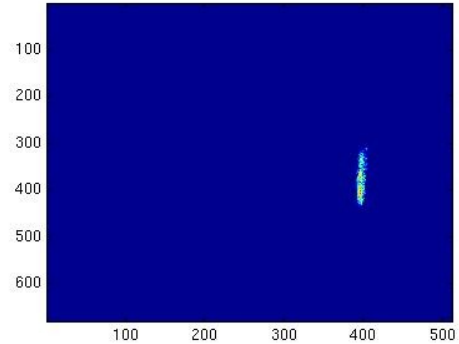
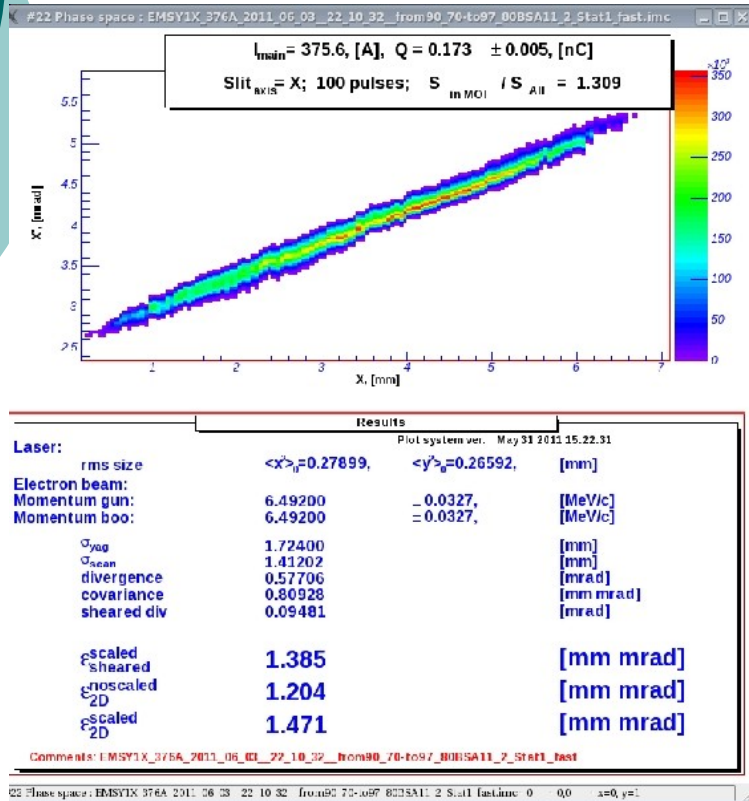
Correction for screen orientation

Thermal Emittance -Y



Beamlet No →

Thermal Emittance -X

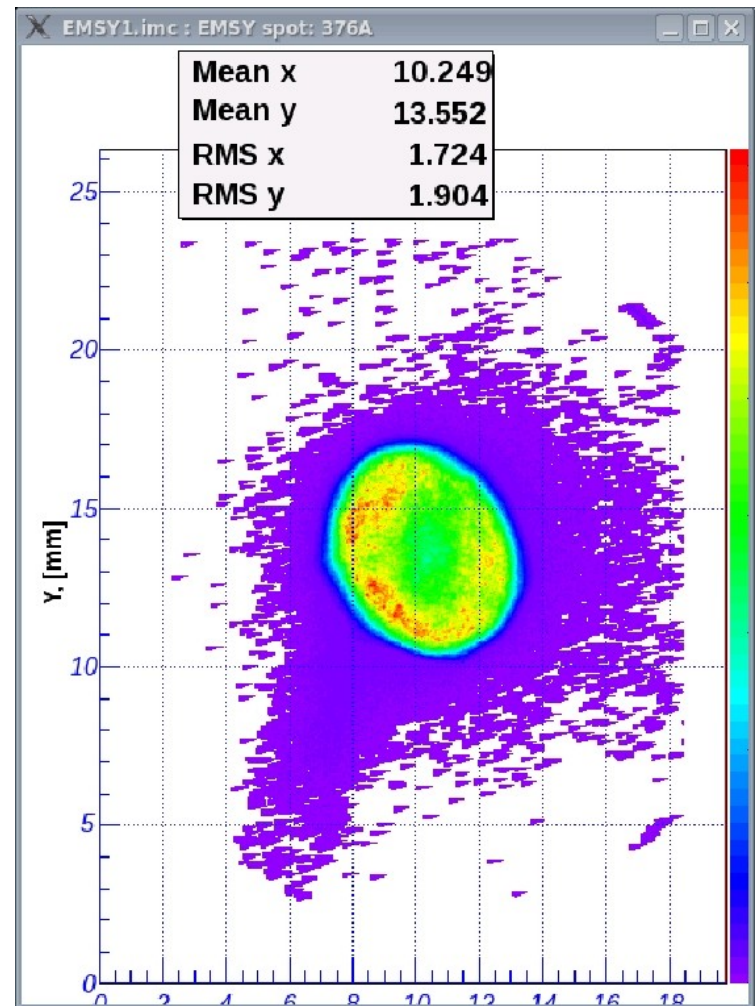
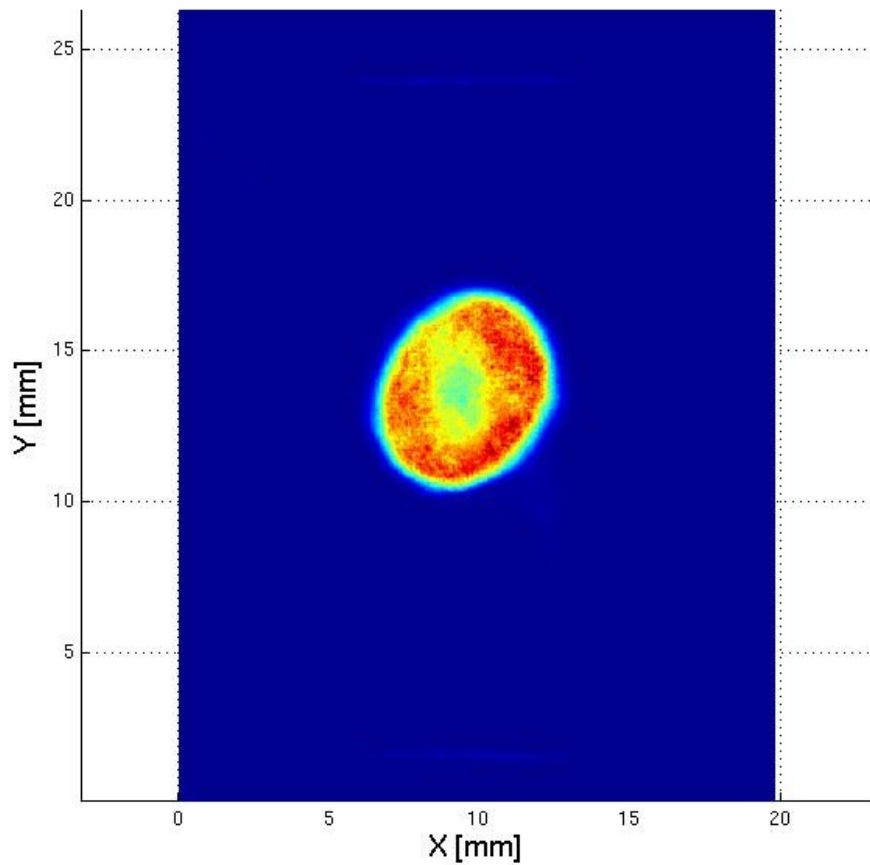


Beamlet No



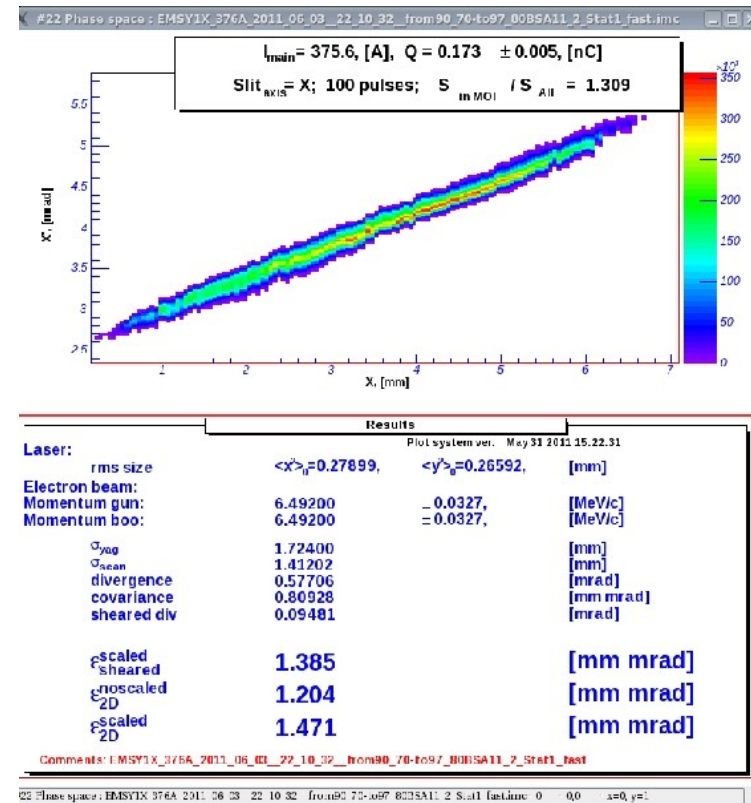
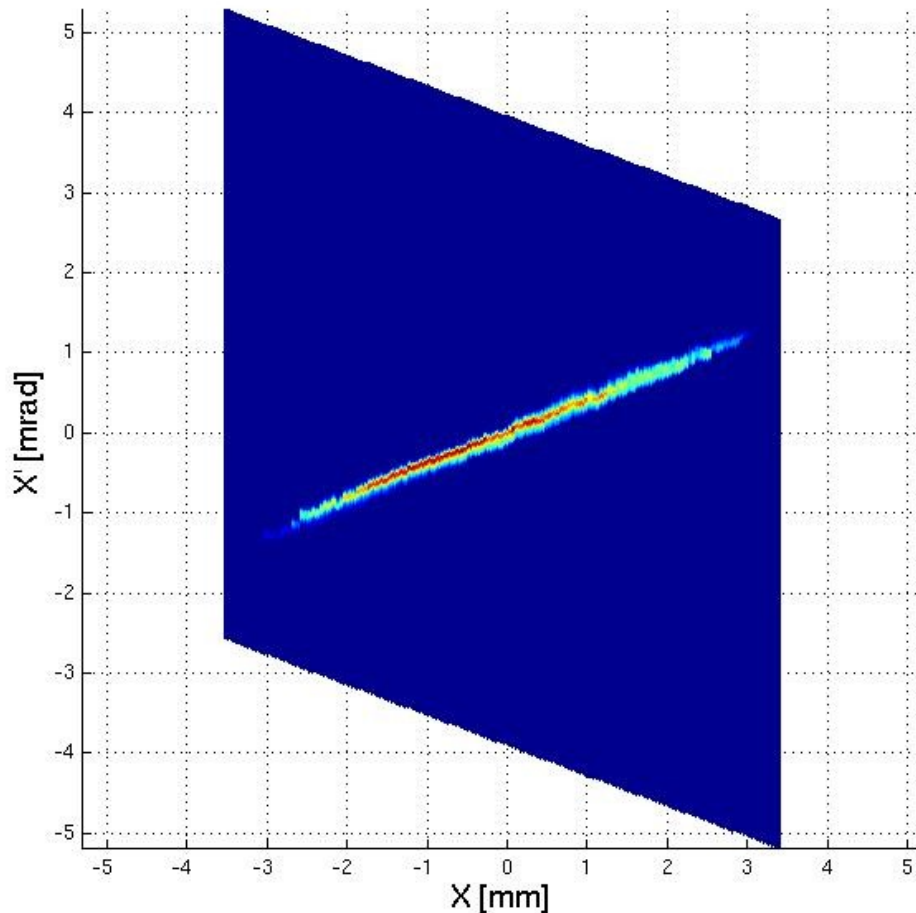
Thermal Emittance

20110603ABSA11_2_Stat1



Thermal Emittance: X - phase space

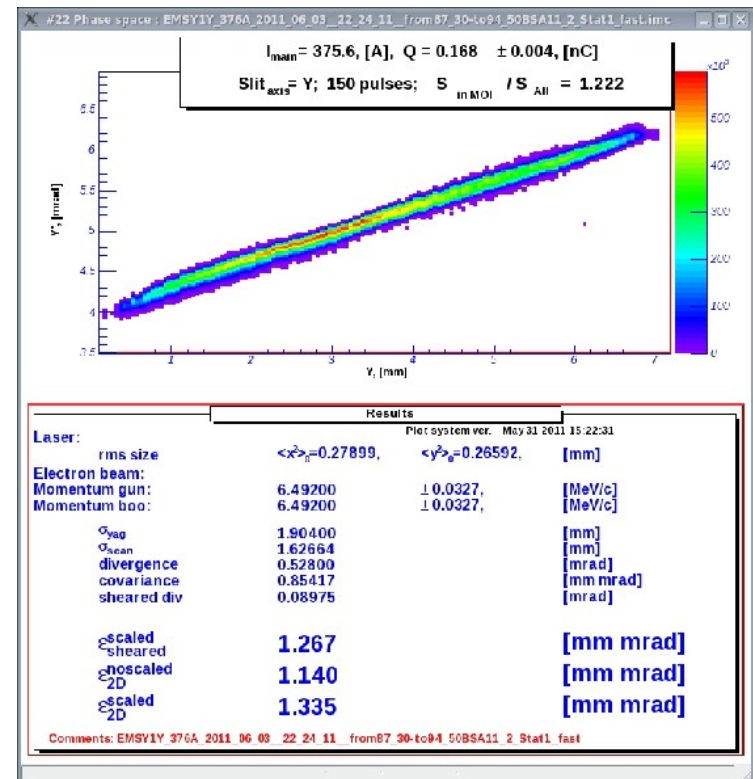
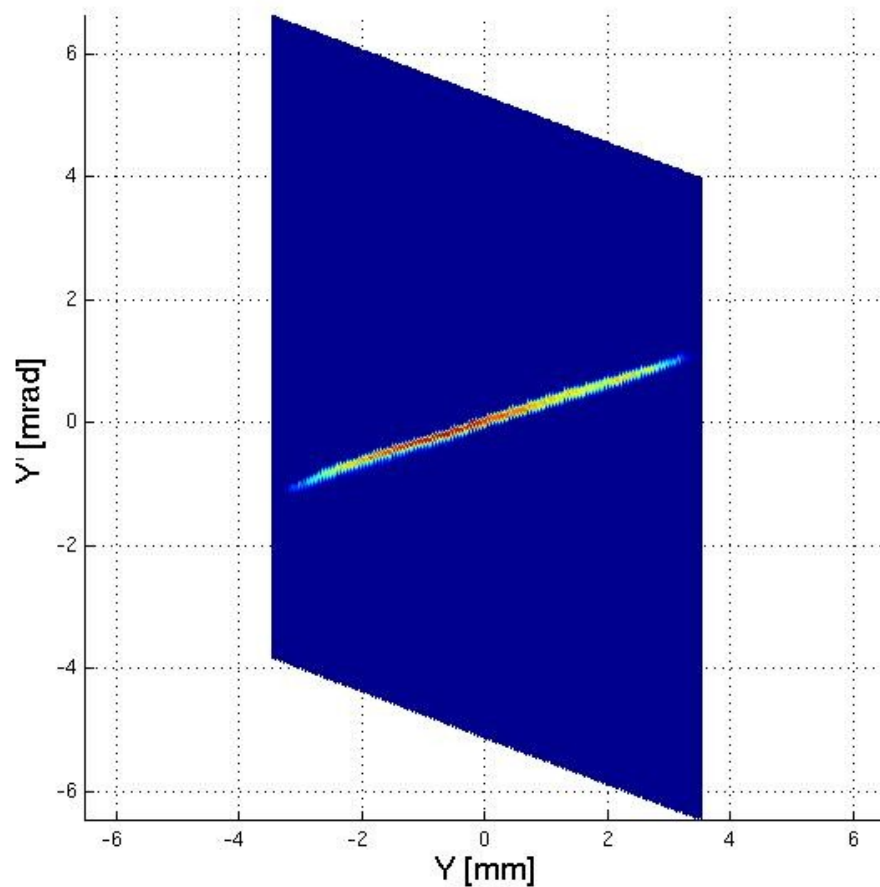
20110603ABSA11_2_Stat1



#22 Phase space: EMSY1X_376A_2011_06_03_22_10_32_from90_70-to97_00BSA11_2_Stat1_fast.imc

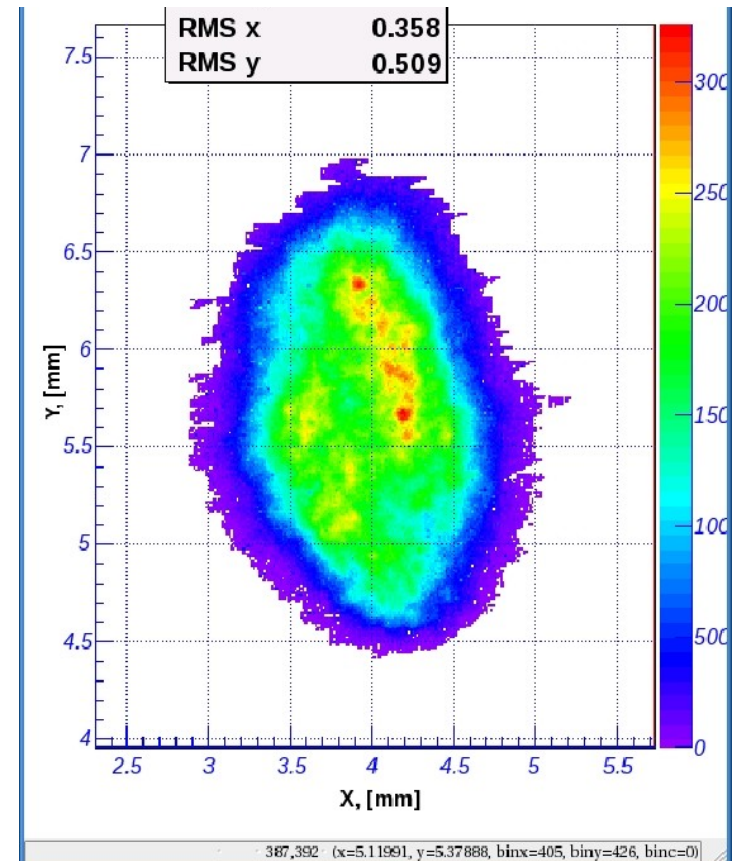
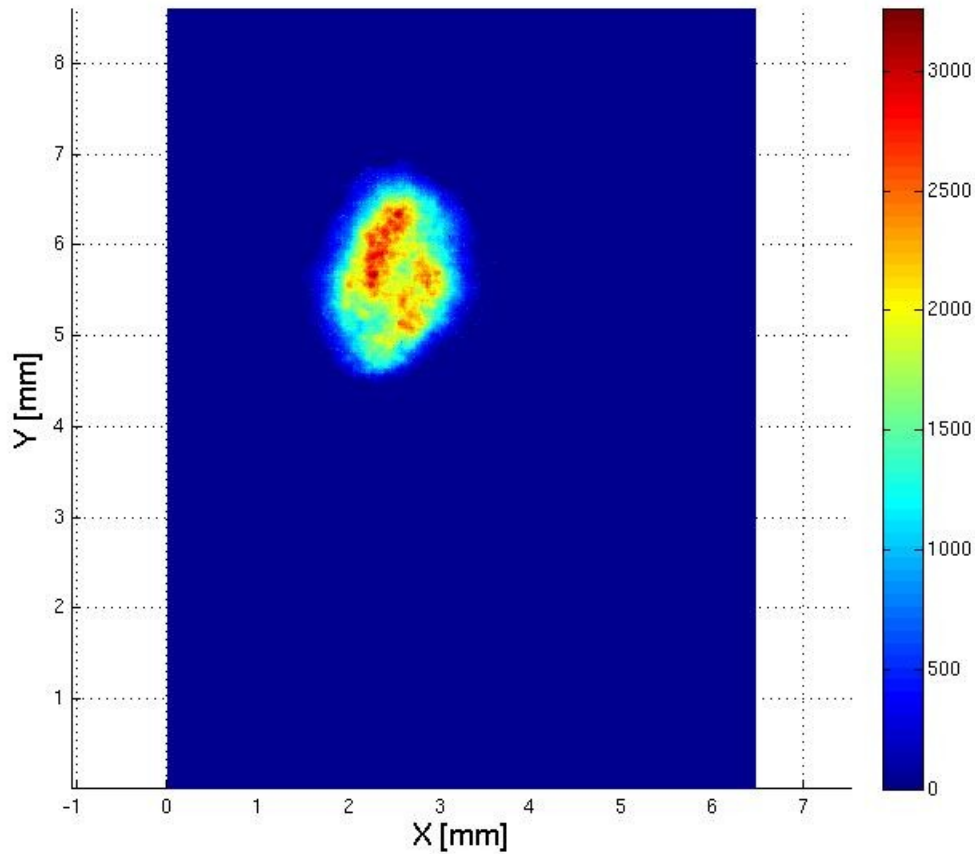
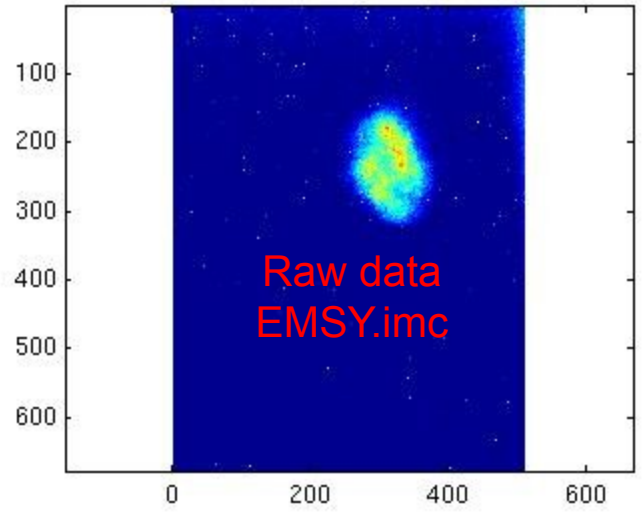
Thermal Emittance: Y - phase space

20110603ABSA11_2_Stat1



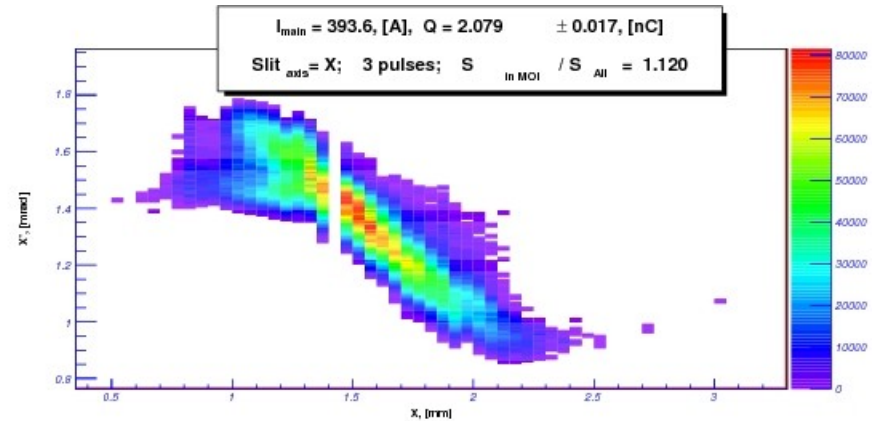
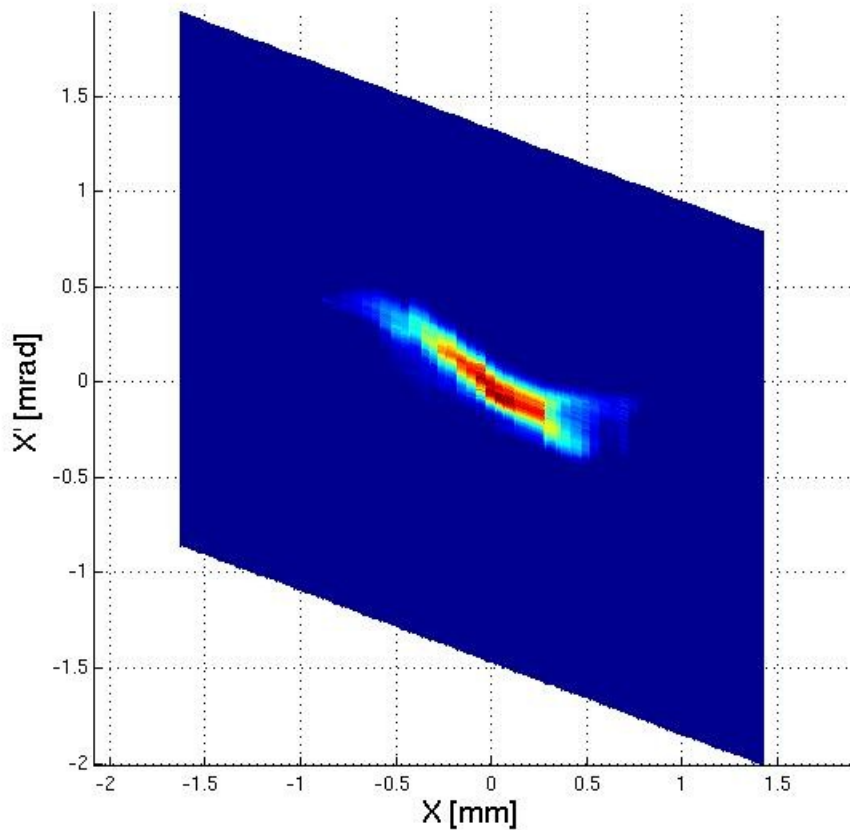
2nC

20110502N_2.0mm/Stat01



2nC: X - phase space

20110502N_2.0mm/Stat01

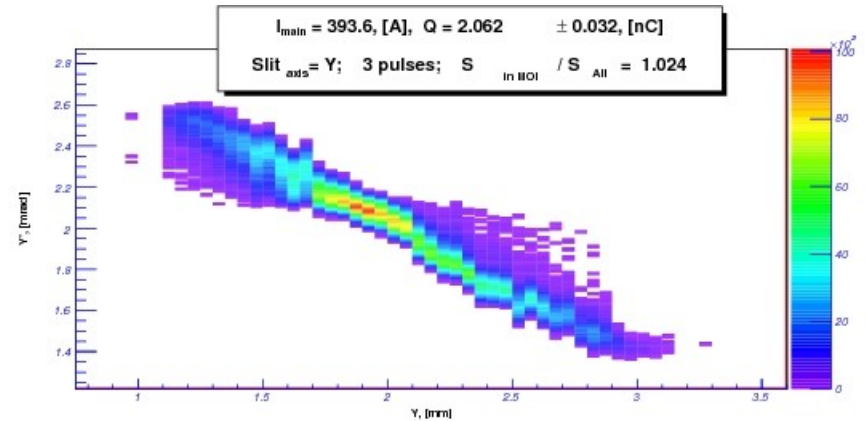
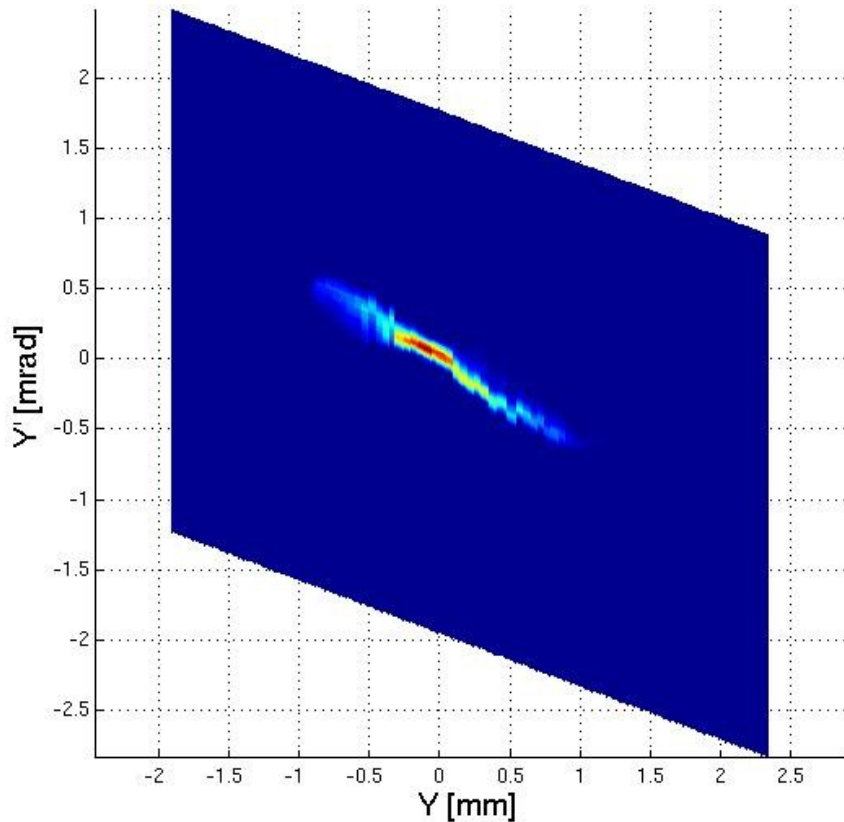


Results			
Laser:			
rms size	$\langle x^2 \rangle_0 = 0.50055,$	$\langle y^2 \rangle_0 = 0.49426,$	[mm]
Electron beam:			
Momentum gun:	6.70400	$\pm 0.0278,$	[MeV/c]
Momentum bo:	24.73100	$\pm 0.0840,$	[MeV/c]
σ_{mag}	0.35780		[mm]
σ_{scat}	0.31650		[mm]
divergence	0.20017		[mrad]
covariance	-0.05829		[mm mrad]
sheared div	0.02906		[mrad]
ϵ^{scaled}			[mm mrad]
$\epsilon^{\text{sheared}}$	1.357		[mm mrad]
$\epsilon^{\text{noscaled}}$			[mm mrad]
ϵ^{2D}	1.406		[mm mrad]
ϵ^{scaled}			[mm mrad]
ϵ^{2D}	1.589		[mm mrad]

Comments: EMSY1X_394A_2011_05_03_01_59_25_from66_70-to70_00_test
Plot system ver. Feb 17 2011 19:41:49

2nC: Y - phase space

20110502N_2.0mm/Stat01



Results			
Laser:			
rms size	$\langle x^2 \rangle_0 = 0.50055,$	$\langle y^2 \rangle_0 = 0.49426,$	[mm]
Electron beam:			
Momentum gun:	6.70400	$\pm 0.0278,$	[MeV/c]
Momentum boe:	24.73100	$\pm 0.0840,$	[MeV/c]
$\sigma_{y\text{sig}}$	0.50910		[mm]
σ_{scat}	0.42802		[mm]
divergence	0.27166		[mrad]
covariance	-0.11260		[mm mrad]
sheared div	0.02899		[mrad]
$c_{\text{sheared}}^{\text{scaled}}$	1.541		[mm mrad]
$c_{2\text{D}}^{\text{noscaled}}$	1.403		[mm mrad]
$c_{2\text{D}}^{\text{scaled}}$	1.669		[mm mrad]

Comments: EMSY1Y_394A_2011_05_03_02_03_18_from63_00-1067_50_test