

# Focal Plane Scans with TRoPIC

eROSITA Camera f.o.v.

- A1 = Drehachse
- A2 = Kippachse
- A9 = TRoPIC Wald-Pantolsky
- A24 = TRoPIC Hoch-Runter

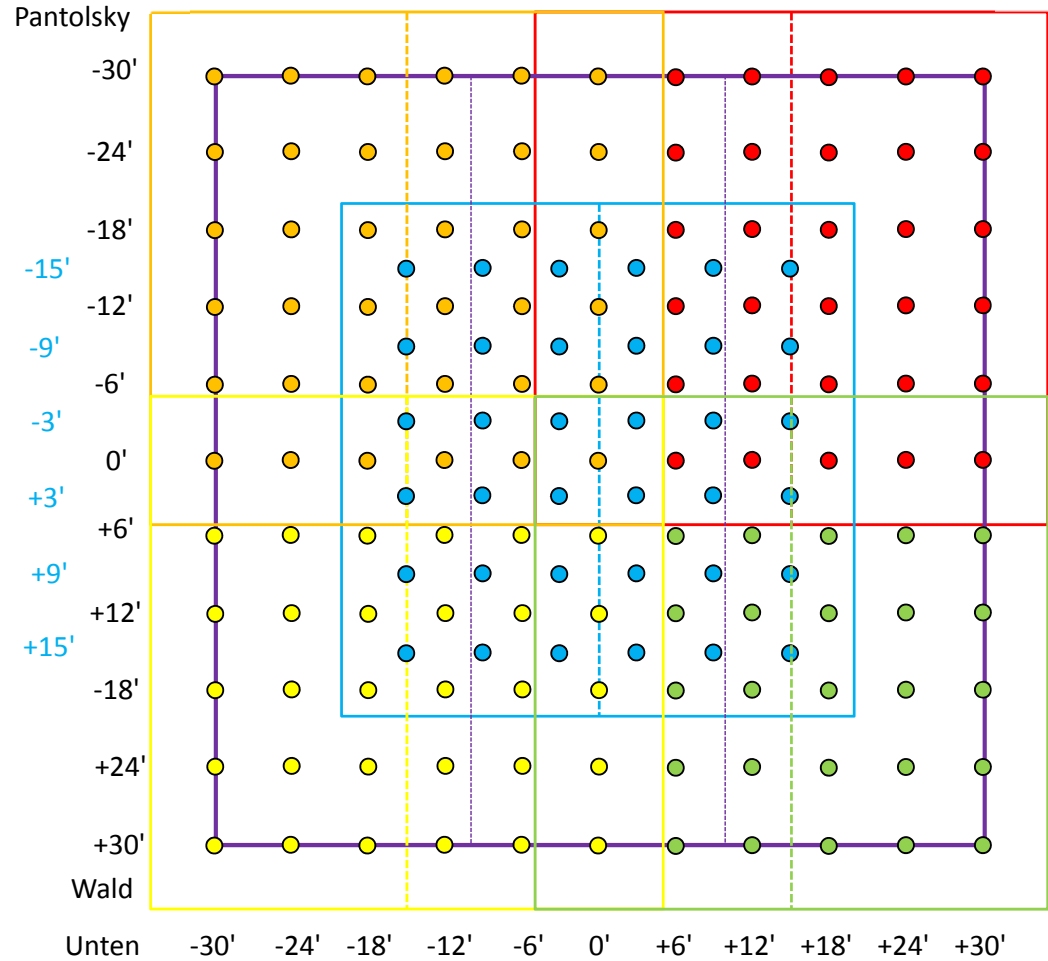
$6 \times 6 = 36$

- A24 +

$5 \times 6 = 30$

$6 \times 6 = 36$

A1



A9

$6 \times 5 = 30$

-15' -9' -3' +3' +9' +15'

$5 \times 5 = 25$

A2

**Total = 36 + 30 + 30 + 25 + 36 = 157 positions**

**Total time 157 x 80 s = 12560 = 3h 30m + Flat field + overhead**

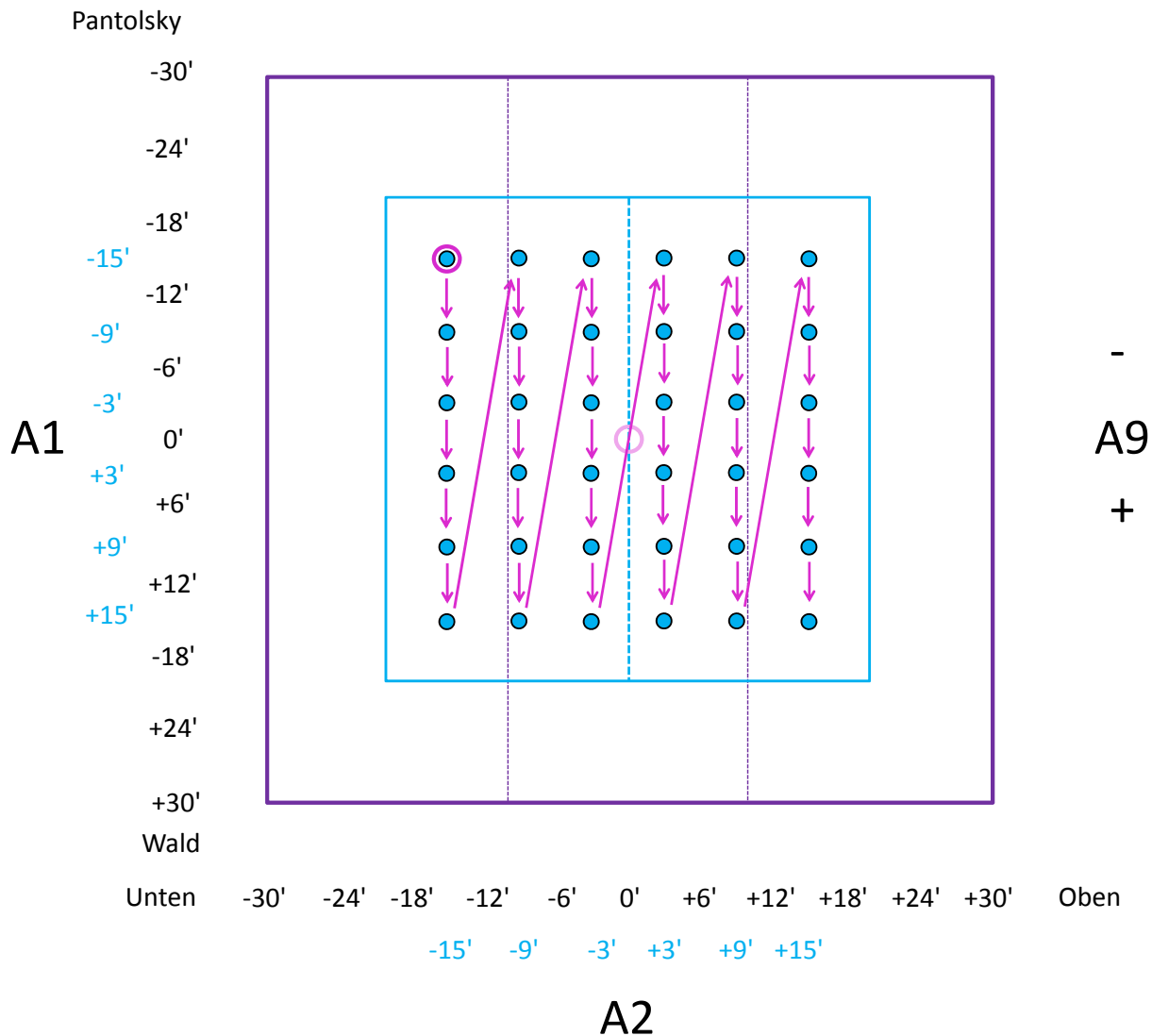
A1 = Drehachse  
 A2 = Kippachse  
 A9 = TRoPIC Wald-Pantolsky  
 A24 = TRoPIC Hoch-Runter

**eROSITA Camera f.o.v.**

# Focal Plane Scans with TRoPIC

**Scan #0 : 6 x 6 = 36 points**

- A24 +



Spiegel auf A1=0 und A2=0 stellen  
 ○ TRoPIC A9 und A24 verschieben  
 damit PSF auf Pixel 128, 128 liegt

○ Dann zur Scananfngsposition  
 A1 = -15' = -11421 steps  
 A2 = -15' = -214286 steps

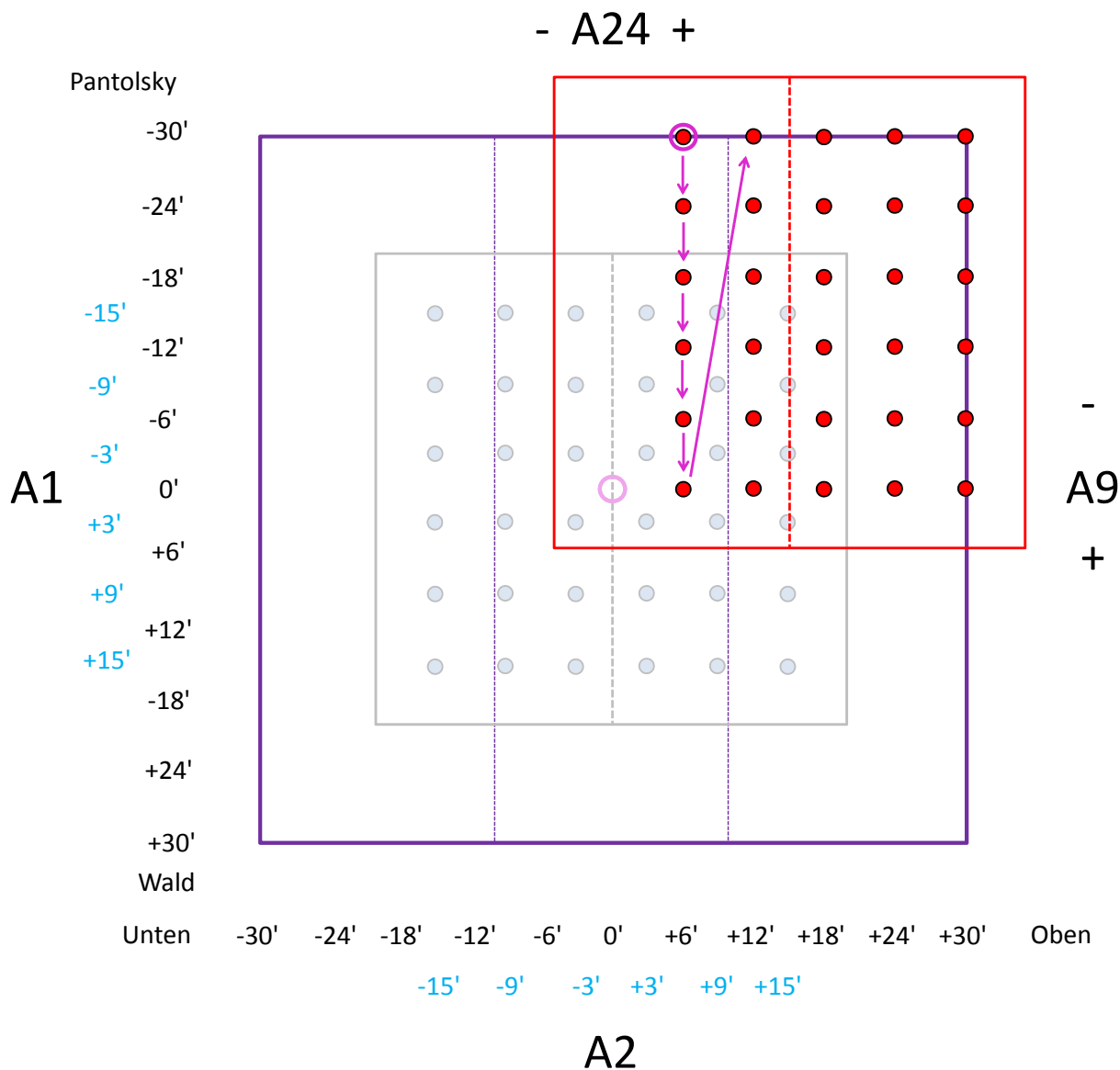
Scan setup		
1	2	
+4569	+85714	80
5	5	

A1 = Drehachse  
A2 = Kippachse  
A9 = TRoPIC Wald-Pantolsky  
A24 = TRoPIC Hoch-Runter

**eROSITA Camera f.o.v.**

# Focal Plane Scans with TRoPIC

**Scan #1 : 6 x 5 = 30 points**



Spiegel auf A1 = 0 und A2 = 0 stellen  
 TRoPIC A9 und A24 verschieben  
damit PSF auf Pixel 128, 128 liegt

Dann zur Scananfangsposition  
 A1 = -15' = -11421 steps  
 A2 = -15' = -214286 steps

Scan setup		
1	2	
+4569	+85714	80
5	5	

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen  
 A9 = +192 pix = +11520 steps  
 A24 = +192 pix = +11520 steps  
damit PSF auf Pixel 32, 32 liegt

Dann zur Scananfangsposition  
 A1 = -30' = -22843 steps  
 A2 = +6' = +85714 steps

Scan setup		
1	2	
+4569	+85714	80
5	4	

A1 = Drehachse  
 A2 = Kippachse  
 A9 = TRoPIC Wald-Pantolsky  
 A24 = TRoPIC Hoch-Runter

# eROSITA Camera f.o.v.

# Focal Plane Scans with TRoPIC

**Scan #2 : 6 x 6 = 36 points**

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = nicht ändern

A24 = -2 x 192 pix = -23040 steps

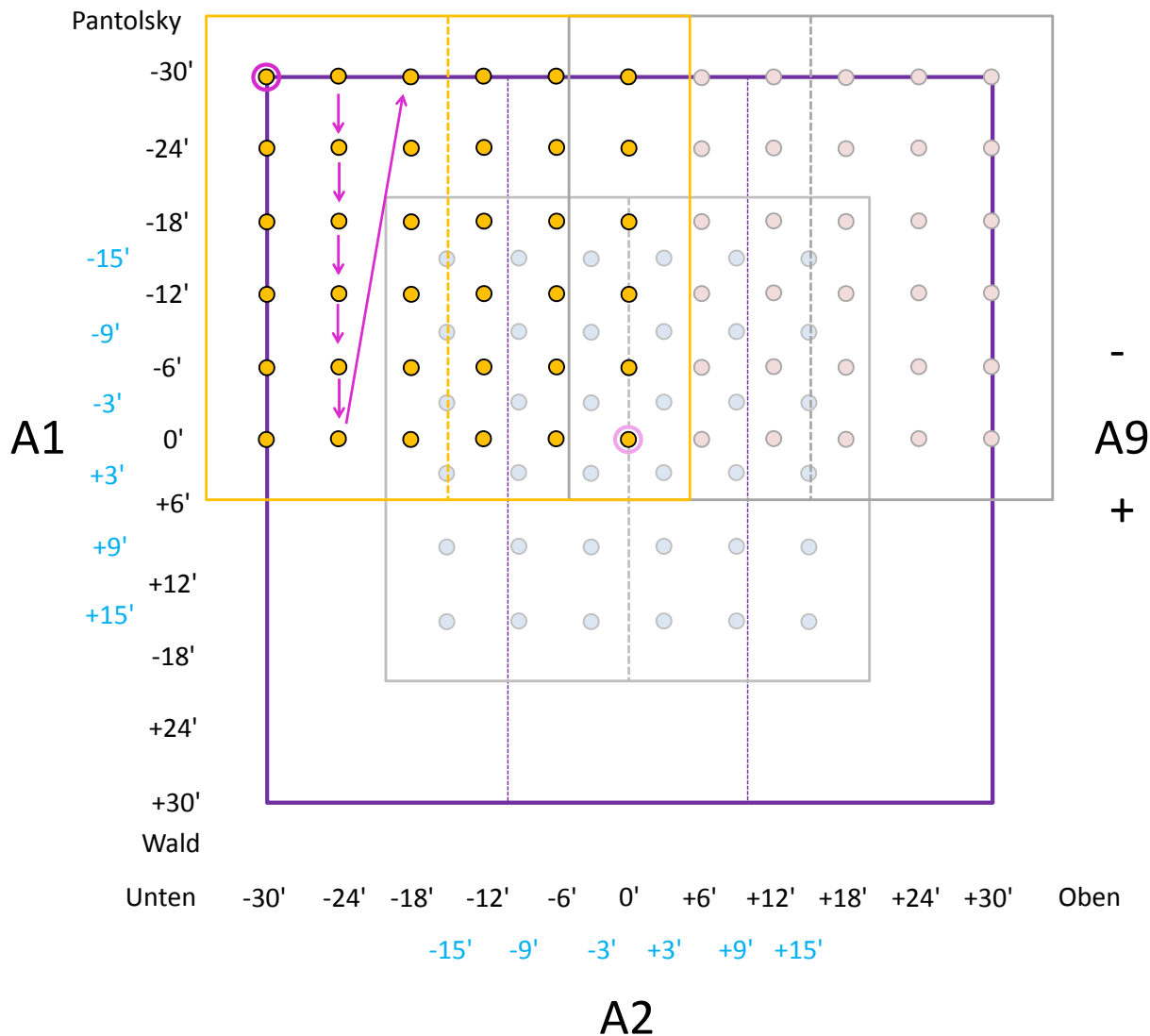
○ damit PSF auf Pixel 224, 32 liegt

Dann zur Scananfangsposition

A1 = -30' = -22843 steps

A2 = -30' = -428571 steps

Scan setup		
1	2	
+4569	+85714	80
5	5	



○ Spiegel auf A1 = 0 und A2 = 0 stellen  
 TRoPIC A9 und A24 verschieben  
 damit PSF auf Pixel 128, 128 liegt

○ Dann zur Scananfangsposition  
 A1 = -15' = -11421 steps  
 A2 = -15' = -214286 steps

Scan setup		
1	2	
+4569	+85714	80
5	5	

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = +192 pix = +11520 steps

A24 = +192 pix = +11520 steps

○ damit PSF auf Pixel 32, 32 liegt

Dann zur Scananfangsposition

A1 = -30' = -22843 steps

○ A2 = +6' = +85714 steps

Scan setup		
1	2	
+4569	+85714	80
5	4	

A1 = Drehachse  
 A2 = Kippachse  
 A9 = TRoPIC Wald-Pantolsky  
 A24 = TRoPIC Hoch-Runter

# eROSITA Camera f.o.v.

# Focal Plane Scans with TRoPIC

**Scan #3 : 4 x 5 = 30 points**

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = nicht ändern

A24 = -2 x 192 pix = -23040 steps

damit PSF auf Pixel 224, 32 liegt

Dann zur Scananfangsposition

A1 = -30' = -22843 steps

A2 = -30' = -428571 steps

Scan setup		
1	2	
+4569	+85714	80
5	5	

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = +2 x 192 pix = +23040 steps

A24 = nicht ändern

damit PSF auf Pixel 224, 224 liegt

Dann zur Scananfangsposition

A1 = +6' = +4569 steps

A2 = -30' = -428571 steps

Scan setup		
1	2	
+4569	+85714	80
4	5	

Spiegel auf A1 = 0 und A2 = 0 stellen  
 TRoPIC A9 und A24 verschieben  
 damit PSF auf Pixel 128, 128 liegt

Dann zur Scananfangsposition

A1 = -15' = -11421 steps

A2 = -15' = -214286 steps

Scan setup		
1	2	
+4569	+85714	80
5	5	

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = +192 pix = +11520 steps

A24 = +192 pix = +11520 steps

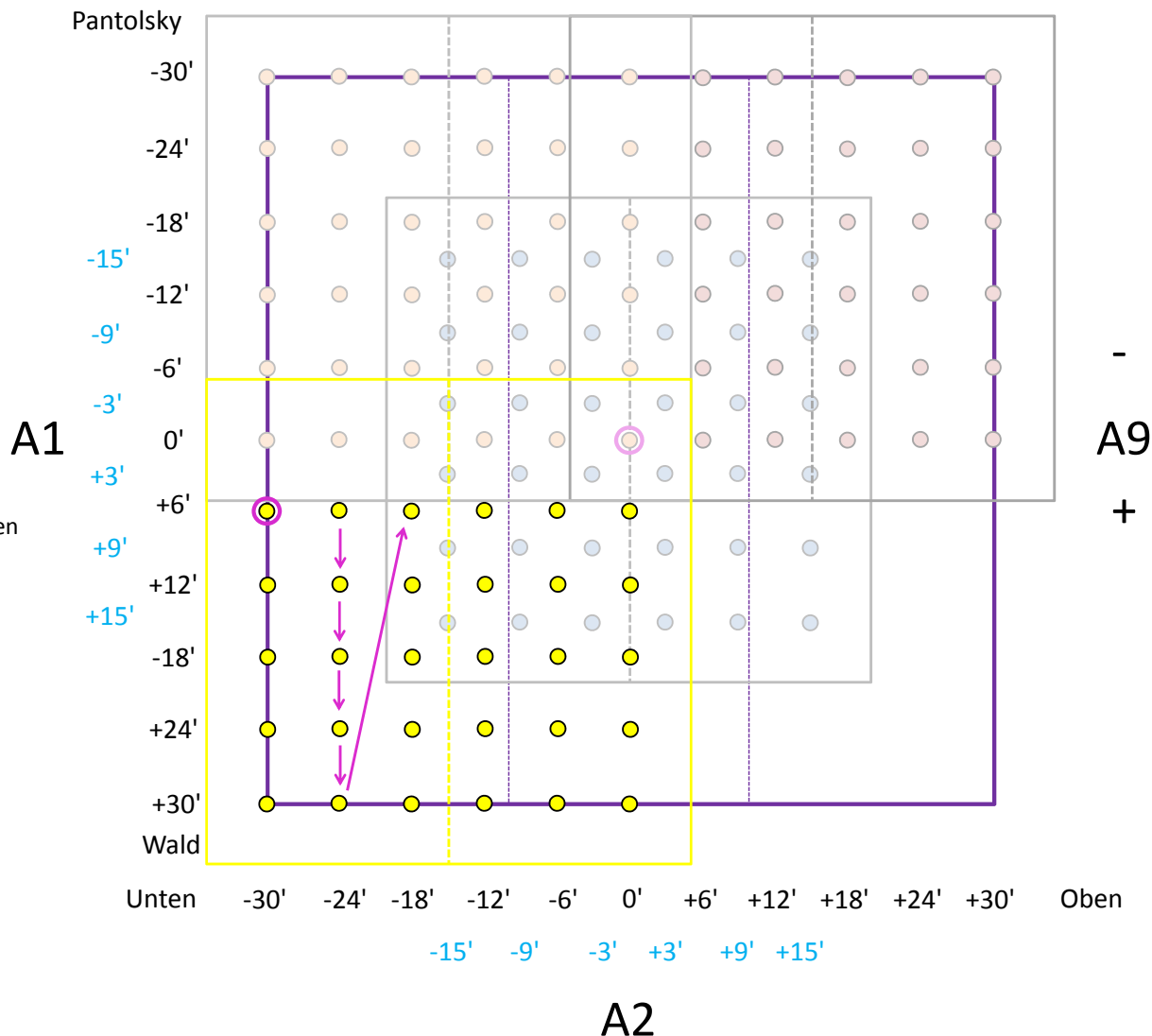
damit PSF auf Pixel 32, 32 liegt

Dann zur Scananfangsposition

A1 = -30' = -22843 steps

A2 = +6' = +85714 steps

Scan setup		
1	2	
+4569	+85714	80
5	4	



A1 = Drehachse  
 A2 = Kippachse  
 A9 = TRoPIC Wald-Pantolsky  
 A24 = TRoPIC Hoch-Runter

# eROSITA Camera f.o.v.

# Focal Plane Scans with TRoPIC

**Scan #4 : 4 x 5 = 30 points**

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = nicht ändern

A24 = -2 x 192 pix = -23040 steps

damit PSF auf Pixel 224, 32 liegt

Dann zur Scananfangsposition

A1 = -30' = -22843 steps

A2 = -30' = -428571 steps

Scan setup		
1	2	
+4569	+85714	80
5	5	

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = +2 x 192 pix = +23040 steps

A24 = nicht ändern

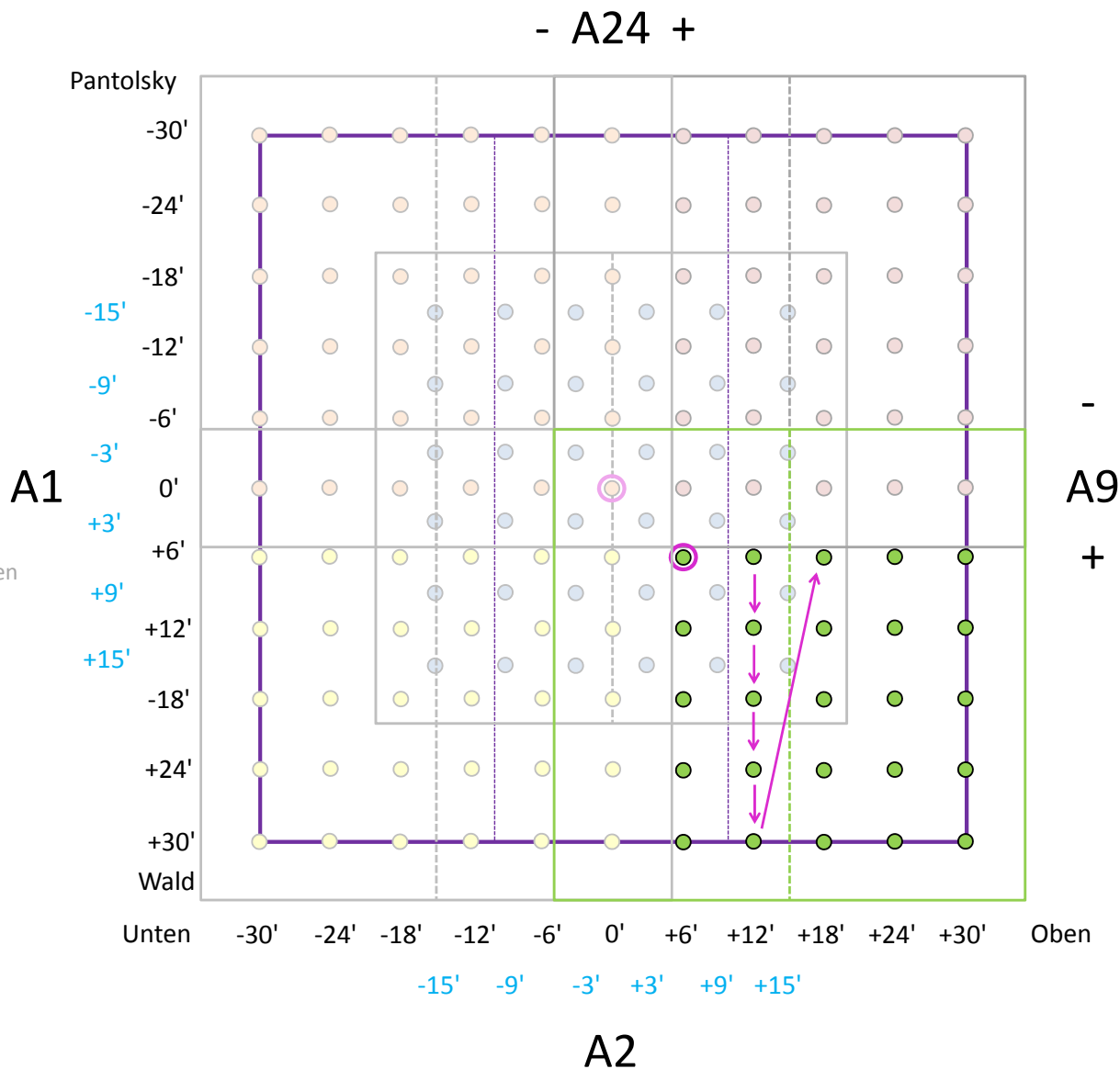
damit PSF auf Pixel 224, 224 liegt

Dann zur Scananfangsposition

A1 = +6' = +4569 steps

A2 = -30' = -428571 steps

Scan setup		
1	2	
+4569	+85714	80
4	5	



Spiegel auf A1 = 0 und A2 = 0 stellen  
 TRoPIC A9 und A24 verschieben  
 damit PSF auf Pixel 128, 128 liegt

Dann zur Scananfangsposition  
 A1 = -15' = -11421 steps  
 A2 = -15' = -214286 steps

Scan setup		
1	2	
+4569	+85714	80
5	5	

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = +192 pix = +11520 steps

A24 = +192 pix = +11530 steps

damit PSF auf Pixel 32, 32 liegt

Dann zur Scananfangsposition

A1 = -30' = -22843 steps

A2 = +6' = +85714 steps

Scan setup		
1	2	
+4569	+85714	80
5	4	

Spiegel auf A1 = 0 und A2 = 0 stellen

TRoPIC bewegen

A9 = nicht ändern

A24 = +2 x 192 pix = +23060 steps

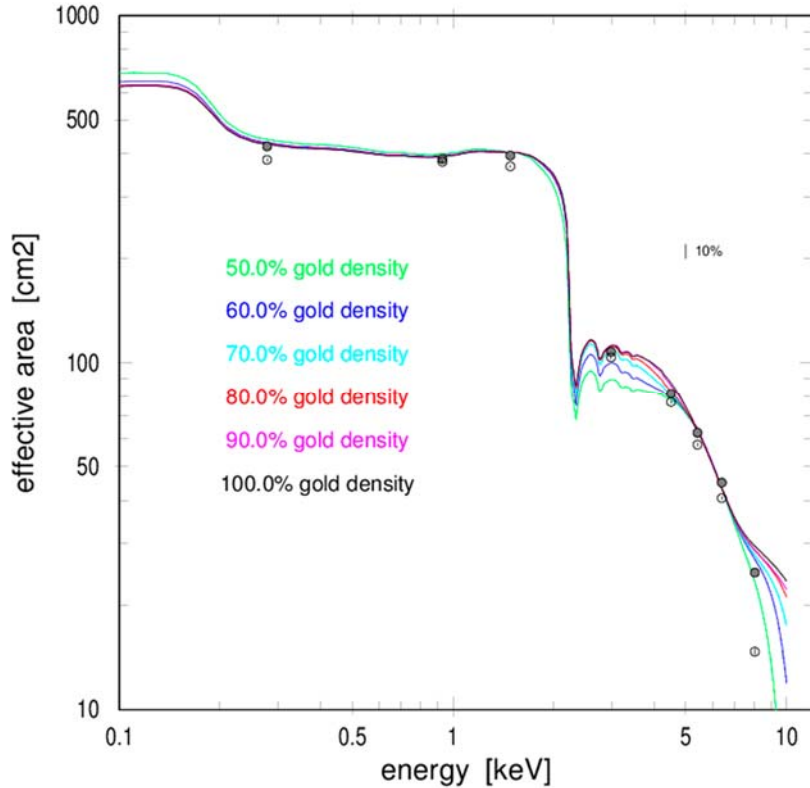
damit PSF auf Pixel 224, 224 liegt

Dann zur Scananfangsposition

A1 = +6' = +4569 steps

A2 = +6' = +85714 steps

Scan setup		
1	2	
+4569	+85714	80
4	4	



## Energies needed to cover effective area with sufficient energy spacing:

C-K (N-K) Cu-L Al-K Ag-L Ti-K (Cr-K) Fe-K Cu-K

## Summary rate-Test for focal-plane-mapping eRO-FM2-X6-CAL

Axis Settings:

A10 = +61214 400 um intrafocal

A01, A02 = 0,0 on-axis (Egger-Menz position)

A09, A24 = 286297, 58960 PSF-center in TRoPIC Pixel (Column #104, Row #128)

All measurements are taken with ...

Exposure-Time 80 seconds

Signal-Thresholds: 32 adu, 10.0 sigma

Maximum of telemetry rate is at ~890 raw/s

path at tropic@ds22: ~/data1/input/eROSITA-FM2-X6-CAL/focal\_plane\_mapping/rate\_test/

./C-K\_gainCC/HK250203.224 C-K, Filter PP+C, 1.4 kV, 60 V, 6.00 V, 157 raw/s, gain CC 28732 ph ok

./C-K\_gainCC/HK250203.226 C-K, Filter PP+C, 1.2 kV, 60 V, 6.00 V, 57 raw/s, gain CC 5960 ph ok

./C-K\_gainCC/HK250203.230 C-K, Filter PP+C, 1.2 kV, 60 V, 7.50 V, 255 raw/s, gain CC 45881 ph ok

**./C-K\_gainCC/HK250203.232 C-K, Filter PP+C, 1.2 kV, 60 V, 8.50 V, 307 raw/s, gain CC 59803 ph ok <----**

./C-K\_gainCC/HK250203.234 C-K, Filter PP+C, 1.2 kV, 60 V, 7.00 V, 222 raw/s, gain CC 37773 ph ok

**./Cu-L\_gainCC/HK250203.270 Cu-L, Filter 1 um Cu, 2.0 kV, 80 V, 6.00 V, 294 raw/s, gain CC 22692 ph ok <----**

./Cu-L\_gainCC/HK250203.272 Cu-L, Filter 1 um Cu, 2.0 kV, 80 V, 6.63 V, 880 raw/s, gain CC 3539 ph --

./Cu-L\_gainCC/HK250203.274 Cu-L, Filter 1 um Cu, 2.0 kV, 80 V, 5.80 V, 200 raw/s, gain CC 12522 ph ok

./Cu-L\_gainCC/HK250203.276 Cu-L, Filter 1 um Cu, 2.0 kV, 80 V, 6.35 V, 550 raw/s, gain CC 51105 ph --

**./Al-K\_gainCC/HK250203.218 Al-K, Filter 10 um Al, 5.0 kV, 200 V, 5.00 V, 294 raw/s, gain CC 20970 ph ok <----**

./Al-K\_gainCC/HK250203.220 Al-K, Filter 10 um Al, 5.0 kV, 200 V, 5.58 V, 940 raw/s, gain CC, telemetry-loss

./Al-K\_gainCC/HK250203.222 Al-K, Filter 10 um Al, 5.0 kV, 200 V, 5.53 V, 895 raw/s, gain CC error

./Ag-L\_gainCC/HK250203.240 Ag-L, Filter 5 um Ag, 8.0 kV, 200 V, 5.40 V, 110 raw/s, gain CC 4867 ph ok

./Ag-L\_gainEC/HK250203.242 Ag-L, Filter 5 um Ag, 8.0 kV, 200 V, 5.40 V, 83 raw/s, gain EC 5670 ph ok

./Ag-L\_gainEC/HK250203.244 Ag-L, Filter 5 um Ag, 8.0 kV, 200 V, 6.50 V, 840 raw/s, gain EC 7692 ph --

**./Ag-L\_gainEC/HK250203.246 Ag-L, Filter 5 um Ag, 8.0 kV, 200 V, 6.00 V, 335 raw/s, gain EC 36688 ph ok <----**

**./Ti-K\_gainEC/HK250203.248 Ti-K, Filter 20 um Ti, 8.0 kV, 300 V, 5.50 V, 180 raw/s, gain EC 12079 ph ok <----**

./Ti-K\_gainEC/HK250203.250 Ti-K, Filter 20 um Ti, 8.0 kV, 300 V, 6.26 V, 885 raw/s, gain EC 258 ph --

./Ti-K\_gainEC/HK250203.252 Ti-K, Filter 20 um Ti, 8.0 kV, 300 V, 6.00 V, 525 raw/s, gain EC 35610 ph --

**./Cr-K\_gainCC/HK250203.254 Cr-K, Filter 12.5 um Cr + 20 um V, 12.0 kV, 500 V, 6.00 V, 398 raw/s, gain EC 31854 ph ok <----**

./Cr-K\_gainCC/HK250203.256 Cr-K, Filter 12.5 um Cr + 20 um V, 12.0 kV, 500 V, 6.40 V, 870 raw/s, gain EC 1621 ph --

./Cr-K\_gainCC/HK250203.258 Cr-K, Filter 12.5 um Cr + 20 um V, 12.0 kV, 500 V, 6.20 V, 593 raw/s, gain EC error

**./Fe-K\_gainEC/HK250203.260 Fe-K, Filter 20 um Mn + 50 um Fe, 12.0 kV, 500 V, 6.50 V, 183 raw/s, gain EC 11613 ph ok**

Spannung/Rate dazwischen <----

**./Fe-K\_gainEC/HK250203.262 Fe-K, Filter 20 um Mn + 50 um Fe, 12.0 kV, 500 V, 7.00 V, 400 raw/s, gain EC 25215 ph (ok)**

./Fe-K\_gainEC/HK250203.264 Fe-K, Filter 20 um Mn + 50 um Fe, 12.0 kV, 500 V, 7.65 V, 850 raw/s, gain EC error

**./Cu-K\_gainEC/HK250203.266 Cu-K, , Filter 100 um Ni, 12.0 kV, 500 V, 7.80 V, 264 raw/s, gain EC 17352 ph ok**

./Cu-K\_gainEC/HK250203.268 Cu-K, , Filter 100 um Ni, 12.0 kV, 500 V, 8.80 V, 540 raw/s, gain EC 1542 ph --

**./N-K\_gainCC/HK160204.002 BN, 1um Ti, 0.9kV, 5V, 8.5V, 364 raw/sec**

**44297 ph ok <----**