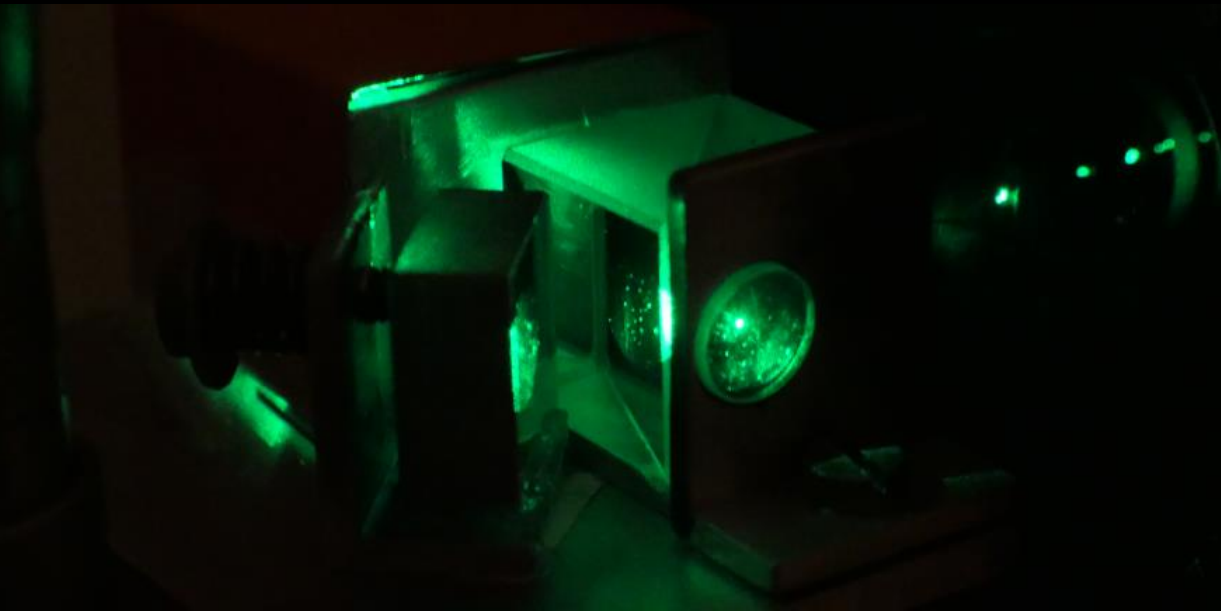


Paraboliseren

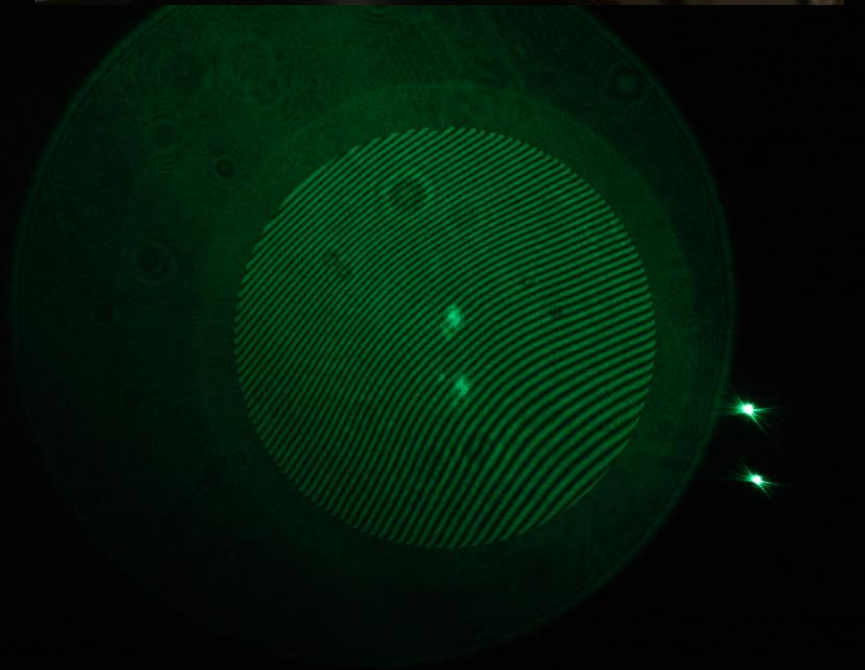
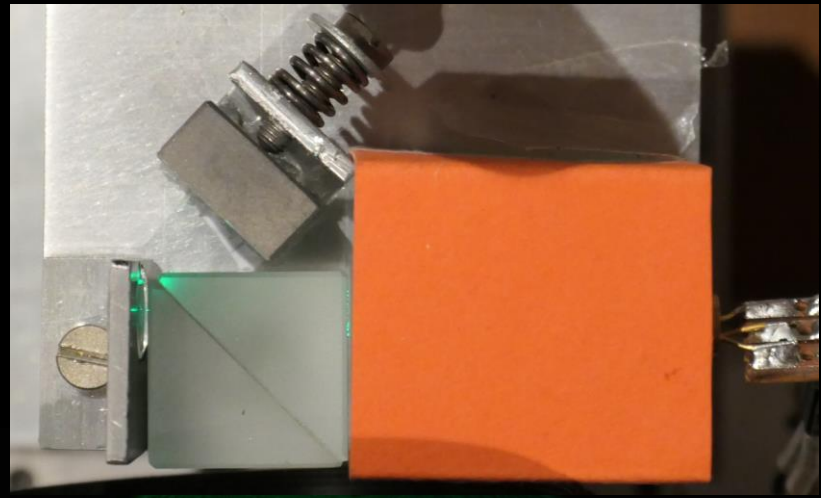
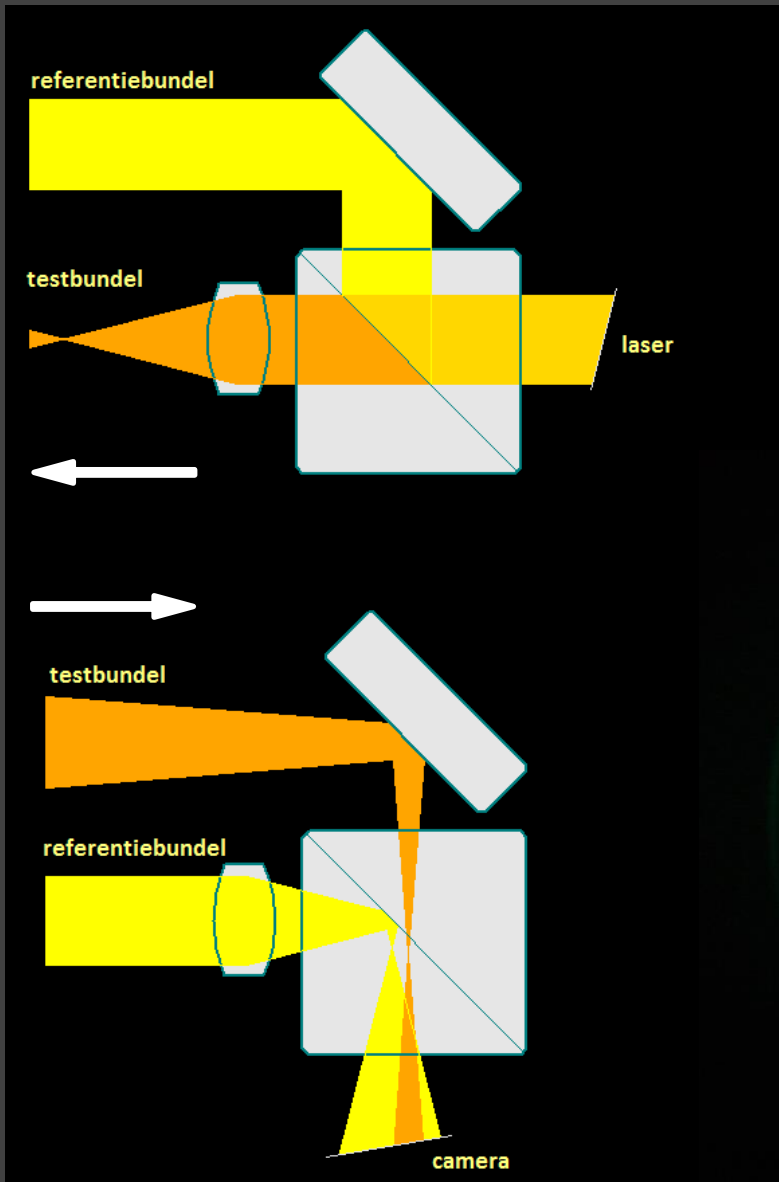
Met behulp van een interferometer



9 Maart 2019, Arjan te Marvelde (AtM)

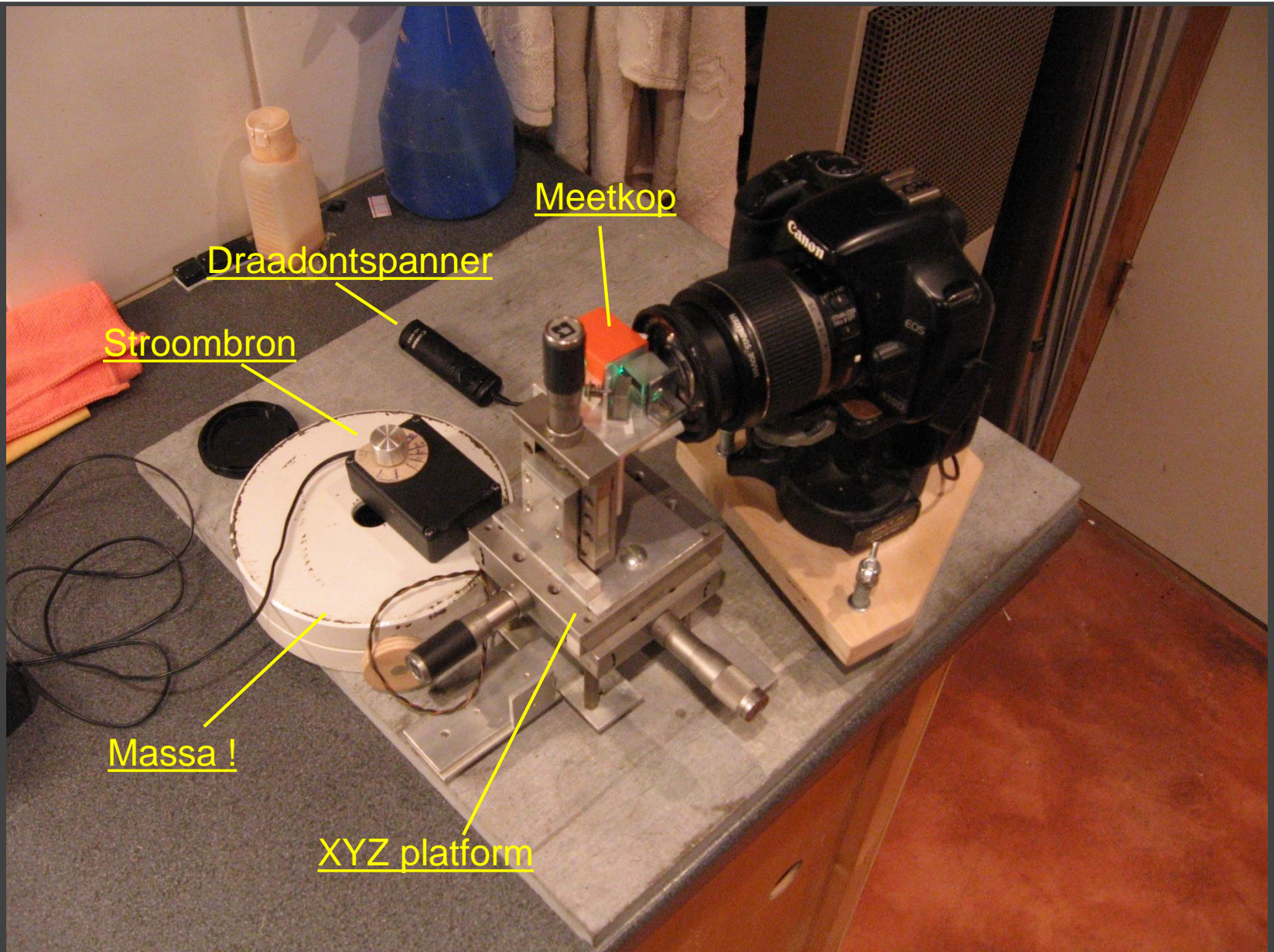


Bath in een notendop





Bath opstelling



Draadontspanner

Stroombron

Meetekop

Massa !

XYZ platform



Analyse met DFTFringe

c91b.wft

Files View Configuration Tools Simulations Help

Read Wavefront/s Subtract wave front

metrics DFTFringe 4.0

\\DS216PLAY\arjan_TEMP-SORT-OUT_20181110\pics\300F3\Bath\c91b.wft

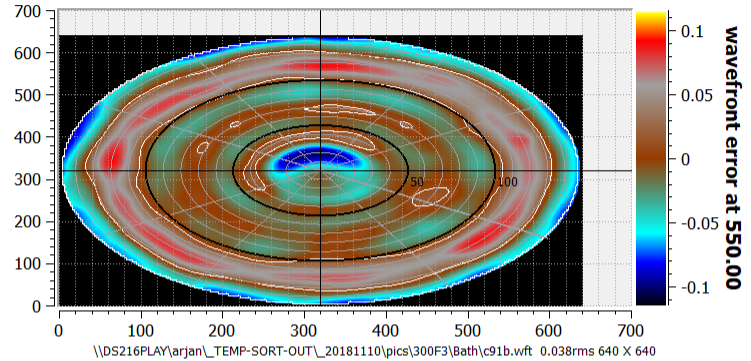
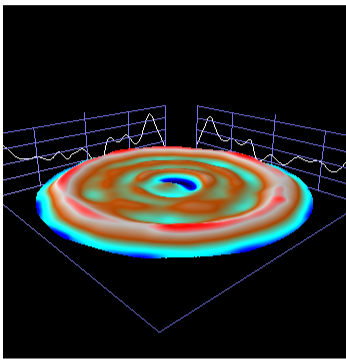
Diameter: 298.500
Roc: 1809.000
Wavefront RMS at 550.0 nm: **0.038**
Strehl: **0.943**
Best Fit Conic: **-0.700**
Desired Conic: -0.69 SANull: -4.6792
Waves Per Fringe: 1.0
Igram laser wavelength: 515.00 nm

recompute Enable All
Enable Spherical only

Zernike Values @ interferogram wavelength

Zernike Term	Wyant	RMS
Piston	<input type="checkbox"/> 18.169	18.169
X Tilt	<input type="checkbox"/> 0.217	0.109
Y Tilt	<input type="checkbox"/> -0.345	-0.172
Defocus	<input type="checkbox"/> 9.654	5.573
X Astig	<input type="checkbox"/> -0.003	-0.001
Y Astig	<input type="checkbox"/> -0.002	-0.001
X Coma	<input type="checkbox"/> -0.006	-0.002
Y Coma	<input type="checkbox"/> -0.507	-0.179
Spherical	<input checked="" type="checkbox"/> -0.066	-0.030
X Trefoil	<input type="checkbox"/> 0.001	0.000
Y Trefoil	<input type="checkbox"/> 0.001	0.000
X 2nd Astig	<input type="checkbox"/> -0.032	-0.010

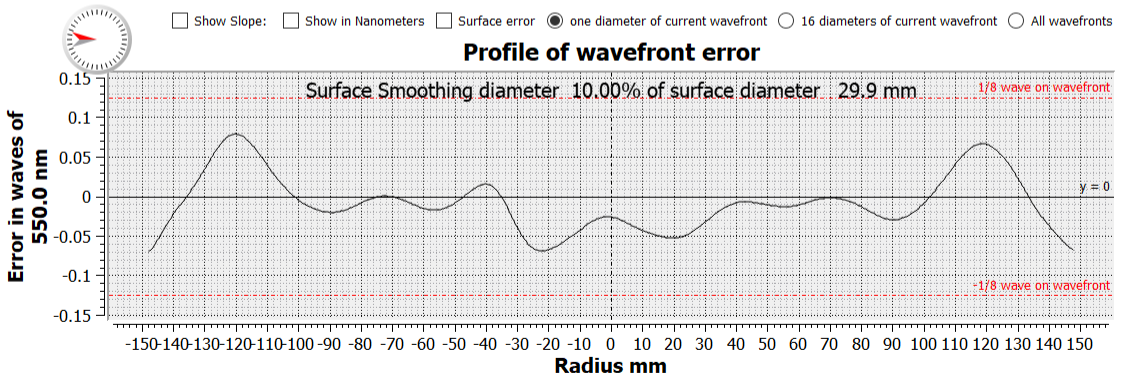
Contour Lines every 0.125 waves FillContour Show All Wavefronts Histogram Ruler Link to Profile



Wavefront error at 550.00

Profile of wavefront error

Surface Smoothing diameter 10.00% of surface diameter 29.9 mm



Error in waves of 550.0 nm

Radius mm

Surface Filter: Gaussian Blur diameter 10.00% 29.85 mm

Defocus: Enable 0.65 Waves 0.026 mm



Polijst model

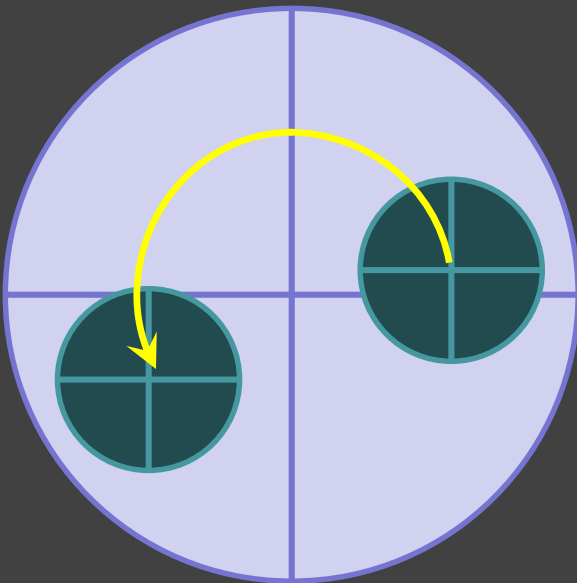
Preston's law:

$$\frac{\Delta d}{\Delta t} = c \cdot P \cdot v$$

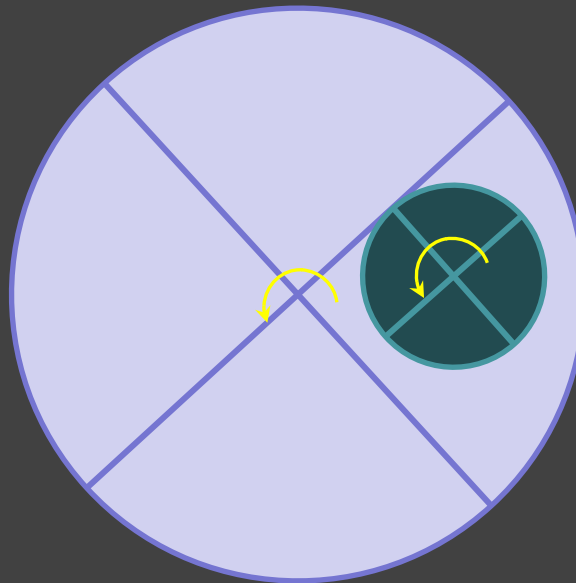
P en v constant: $\Delta d \sim \Delta t$



Frank W. Preston



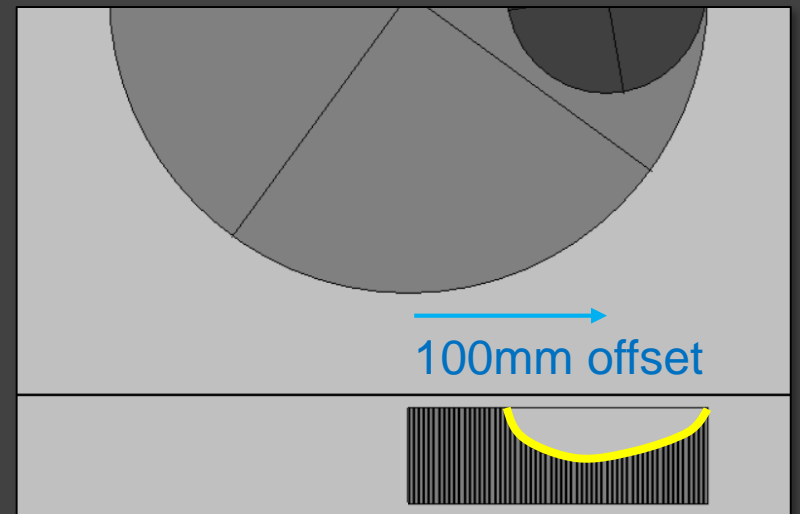
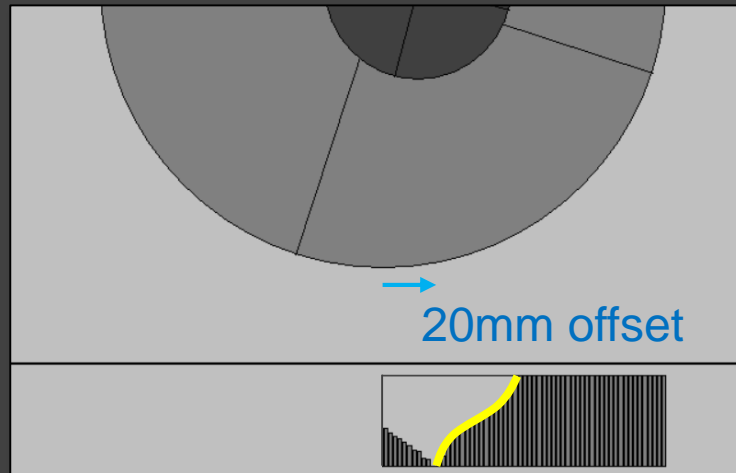
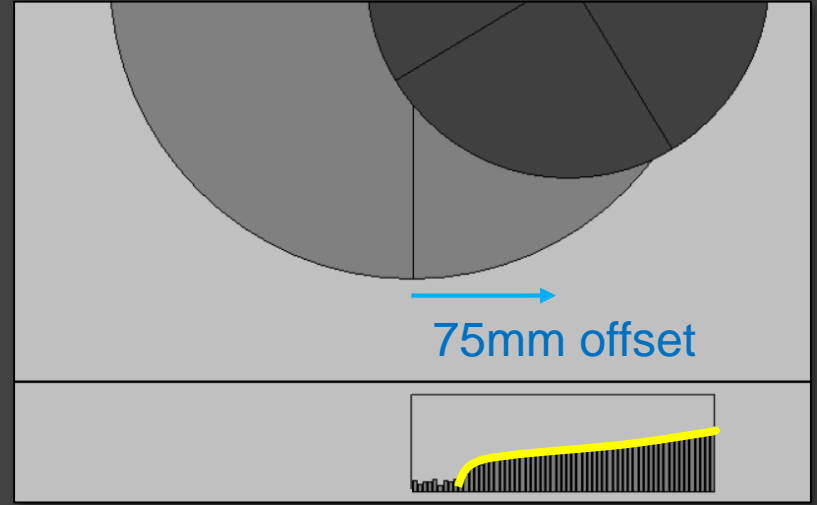
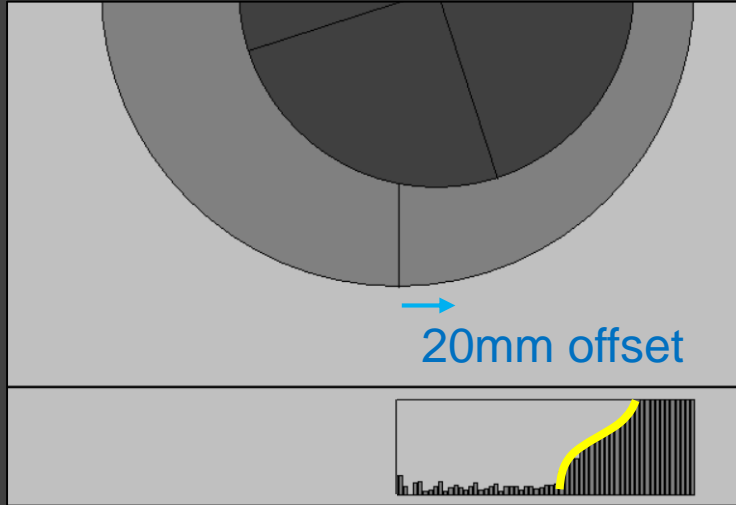
Hand: circulaire slagen



Machine: spinpolish

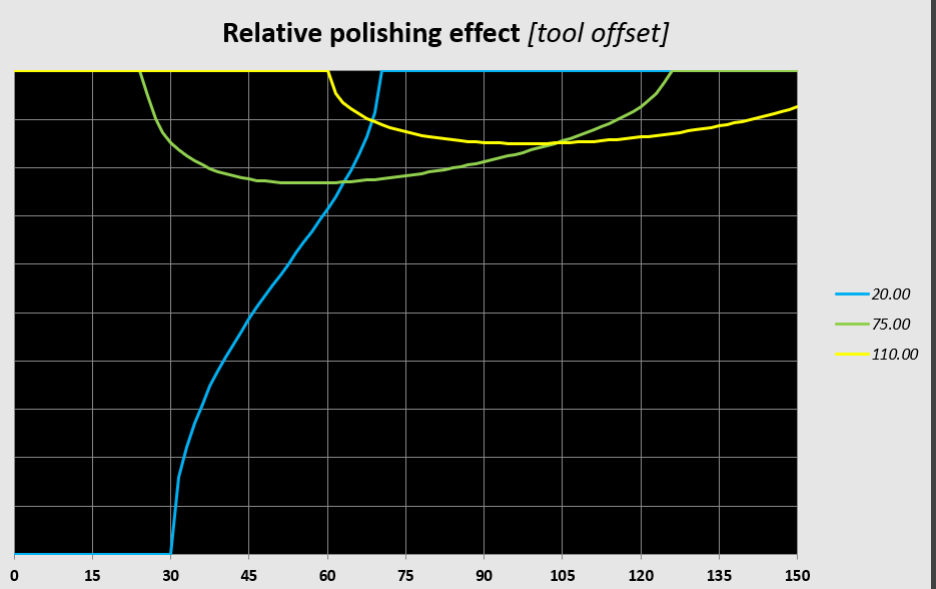
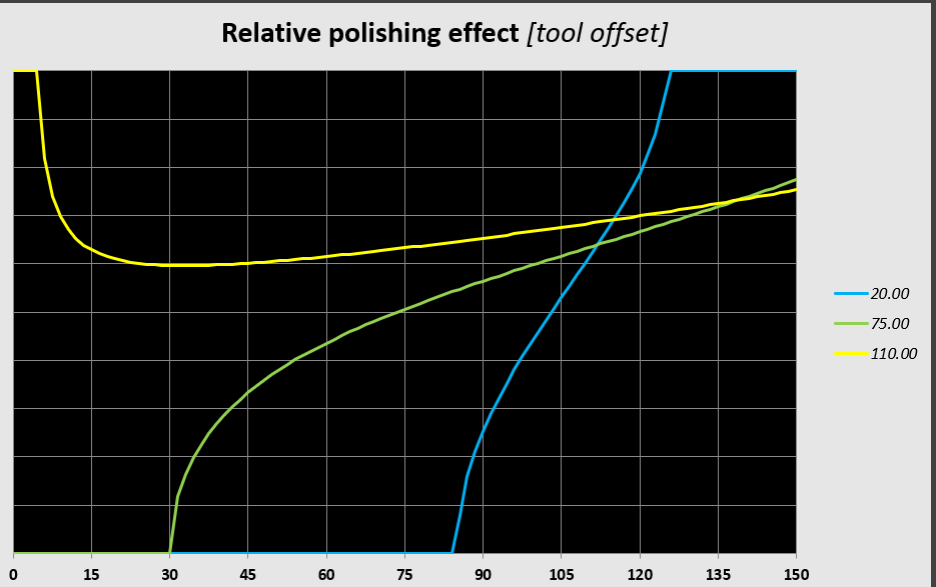
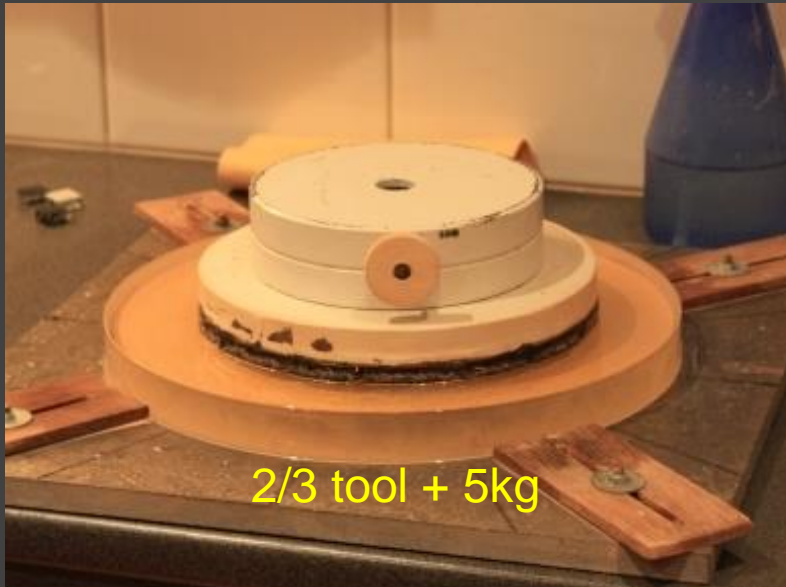


Spinpolish : *PolSim*



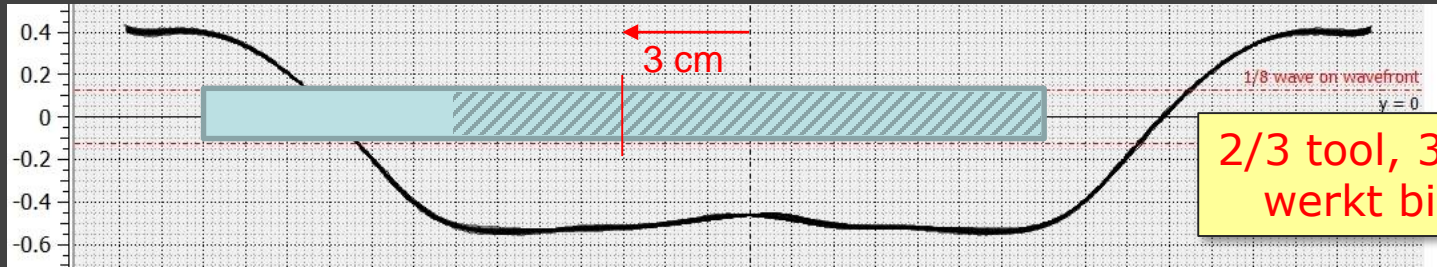


Handmatig: *Excel*

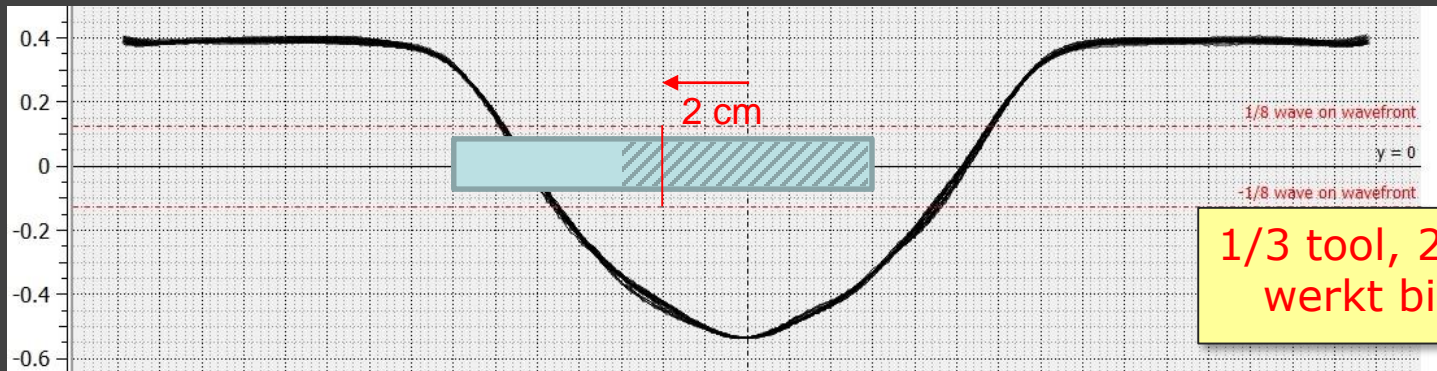




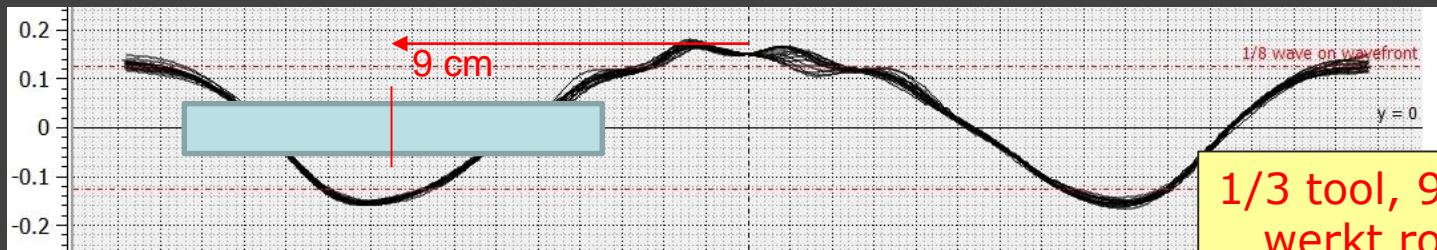
Gemeten effecten



2/3 tool, 3 cm offset, 30 min werkt binnen 13 cm



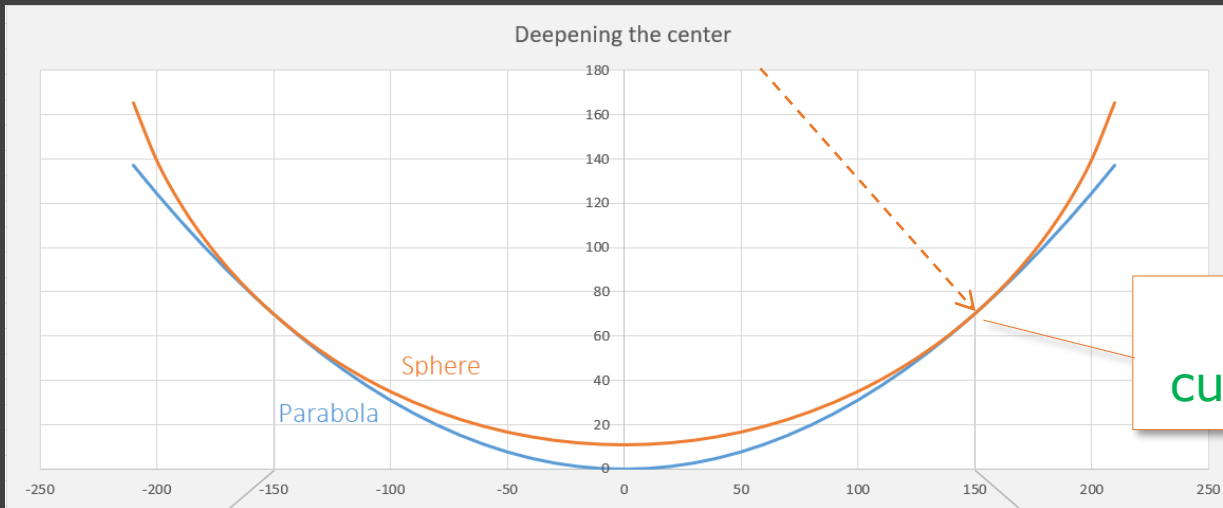
1/3 tool, 2 cm offset, 15 min werkt binnen 7 cm



1/3 tool, 9 cm offset, 15 min werkt rond 9 cm



Een 300mm - F/3



Centrum uitdiepen:
curves raken op de rand

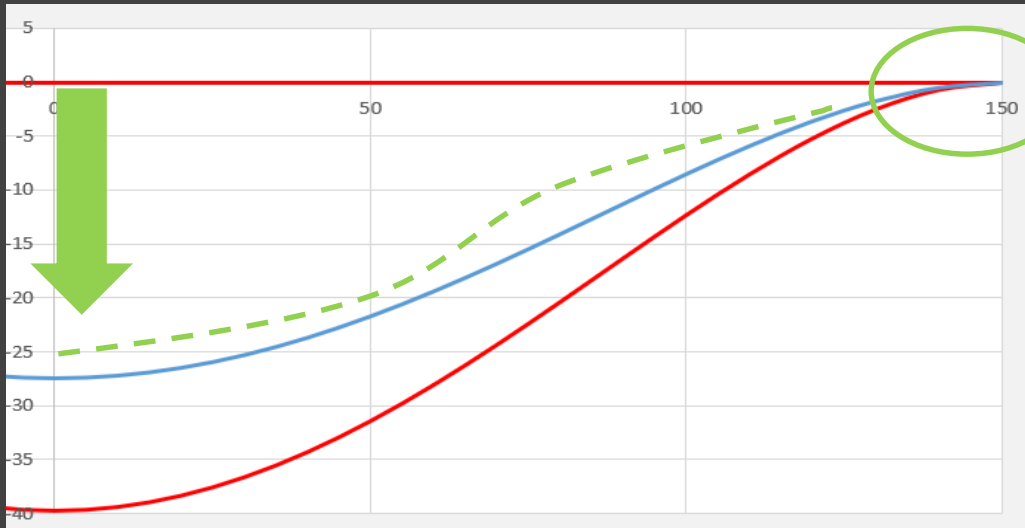


Correctie ellips
→ ca 7 μ m

Correctie parabool
→ ca 11 μ m

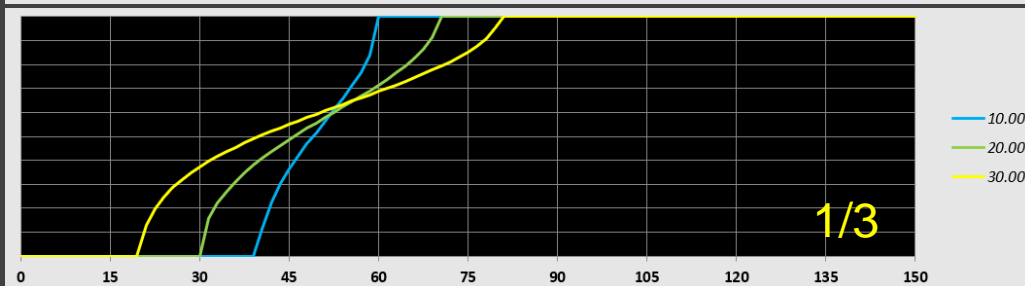
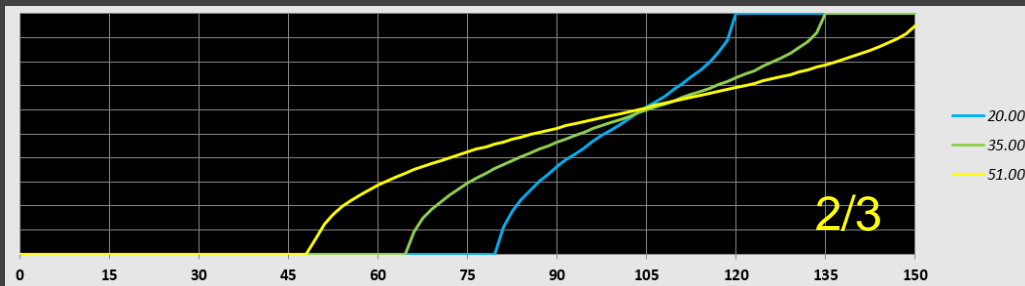


Een strategie



Start met een goede rand!

Centrum uithollen;
hou curve in de gaten
relatief korte sessies



Gebruik afwisselend
2/3 en 1/3 tool

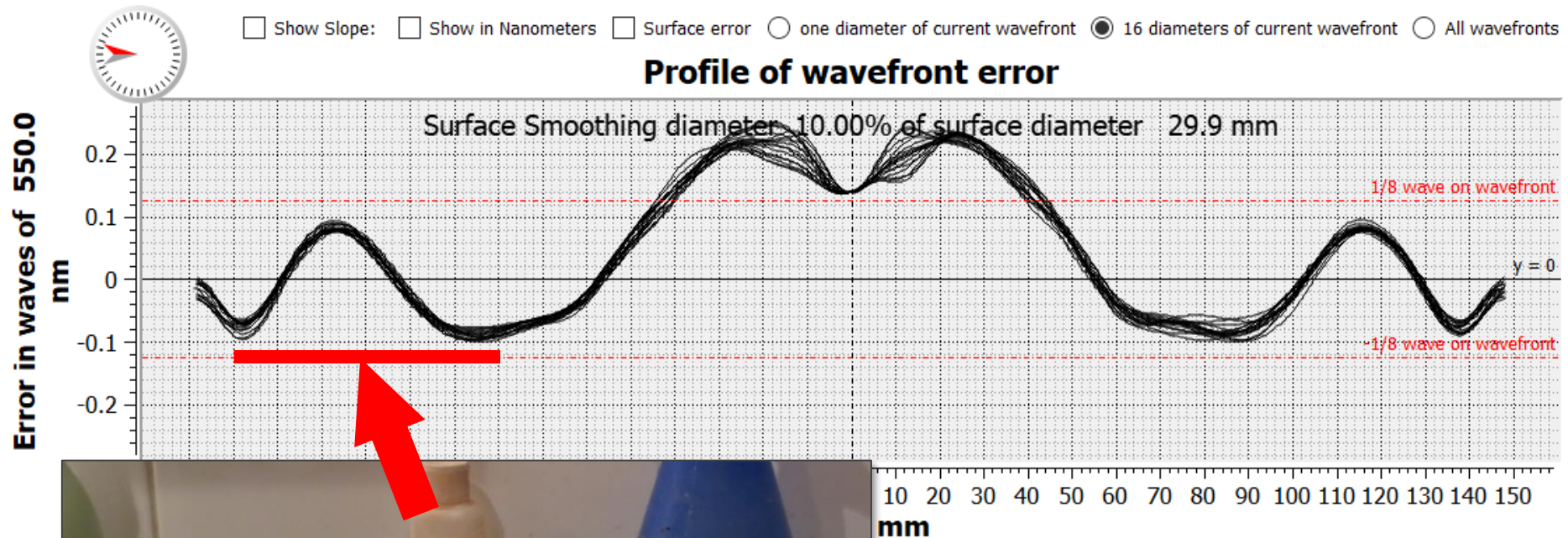


Centrum uitdiepen

#	tool	offset	repeat	time	result	note
17	2/3	1-5cm, 5kg	1 rnd	30 min	k=-0.09	
18	2/3	1-5cm, 5kg (more wide strokes)	1 rnd	30 min	k=-0.09	
19	2/3	1-5cm, 5kg (more narrow strokes)	1 rnd	25 min	k=-0.10	
20	1/3	1-3cm, 1kg	2 rnd	20 min	k=-0.17	
21	2/3	3cm, 5kg	2 rnd	25 min	k=-0.17	
22	1/3	2-6cm, 1kg	2 rnd	30 min	k=-0.24	
23	2/3	3cm, 5kg	2 rnd	25 min	k=-0.25	
24	1/3	2-6cm, 1kg	1 rnd	30 min	k=-0.31	
25	1/3	2-9cm, 1kg	1 rnd	25 min	k=-0.34	
26	2/3	3cm, 5kg	2 rnd	30 min	k=-0.36	Deepens within 130mm, 0.8 waves, flat center
27	1/3	1-5 cm, 1kg	2 rnd	25 min	k=-0.46	Deepens within 85mm, 1.5 waves
28	2/3	3-10 cm, 5kg, smoothe/lower edge	1 rnd	10 min	k=-0.45	Does not work!
29	2/3	3 cm, 5kg	3 rnd	60 min	k=-0.51	Edge is much improved
30	1/3	1-4 cm, 1kg	2 rnd	30 min	k=-0.62	Deepens within 90mm, 2.0 waves
31	1/3	2 cm, 1kg	1 rnd	15 min	k=-0.67	Deepens within 70mm, 1.0 waves
32	2/3	3 cm, 5kg	1 rnd	20 min	k=-0.65	
33	1/3	2 cm, 1kg	2 rnd	30 min	k=-0.76	Ridge between 35-135 mm
34	1/3	8.5 cm, 1kg, + some narrower	1 rnd	10 min	k=-0.75	...reduced
35	1/3	8.5 cm, 1kg, + some licks 13.5 cm off	1 rnd	15 min	k=-0.73	...reduced, center is rising
36	1/3	8.5cm, 1kg	1 rnd	15 min	k=-0.70	Central hill, slope 30-70mm, 0.4 wave
37	1/3	2 cm, 1kg	1/2 rnd	7 min	k=-0.73	
38	1/3	9-11 cm, 1kg	1 rnd	15 min	k=-0.70	Strehl 80%
39	2/3	3.5 cm, 5kg	1 rnd	10 min	k=-0.69	Slope hardly less, need small tool!



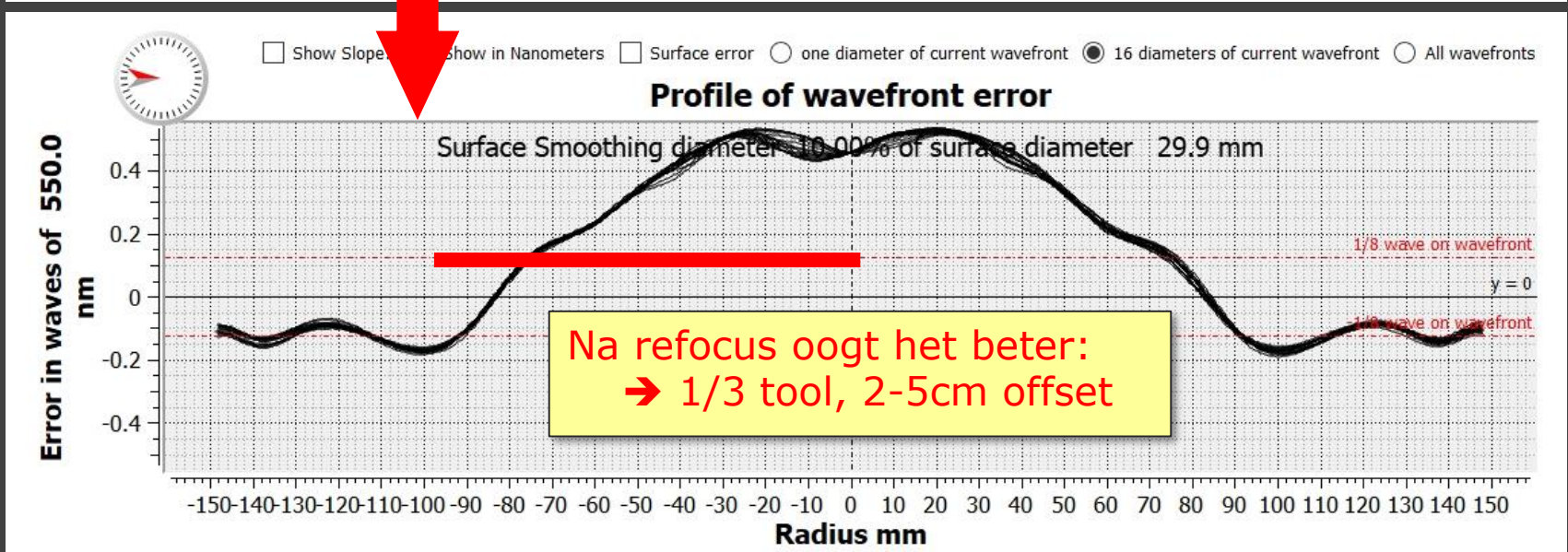
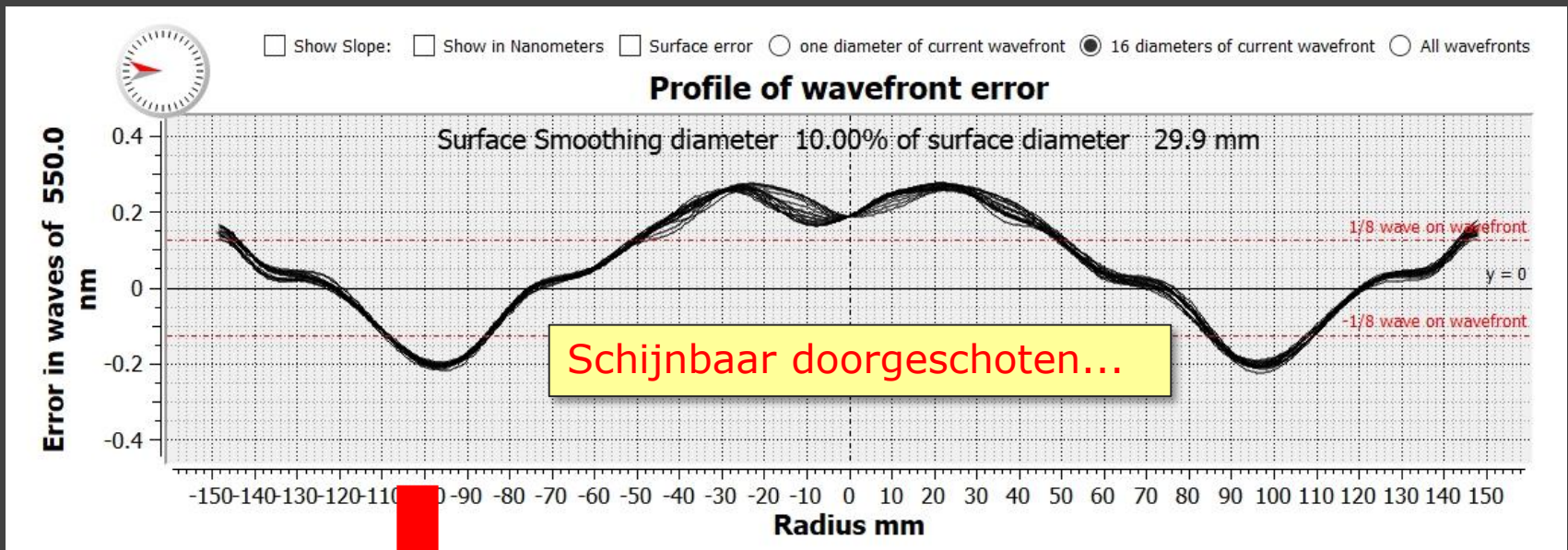
Retoucheren van zones



Gebruik een kleine tool voor retoucheerwerk:
1/5 diameter, + 300gr.

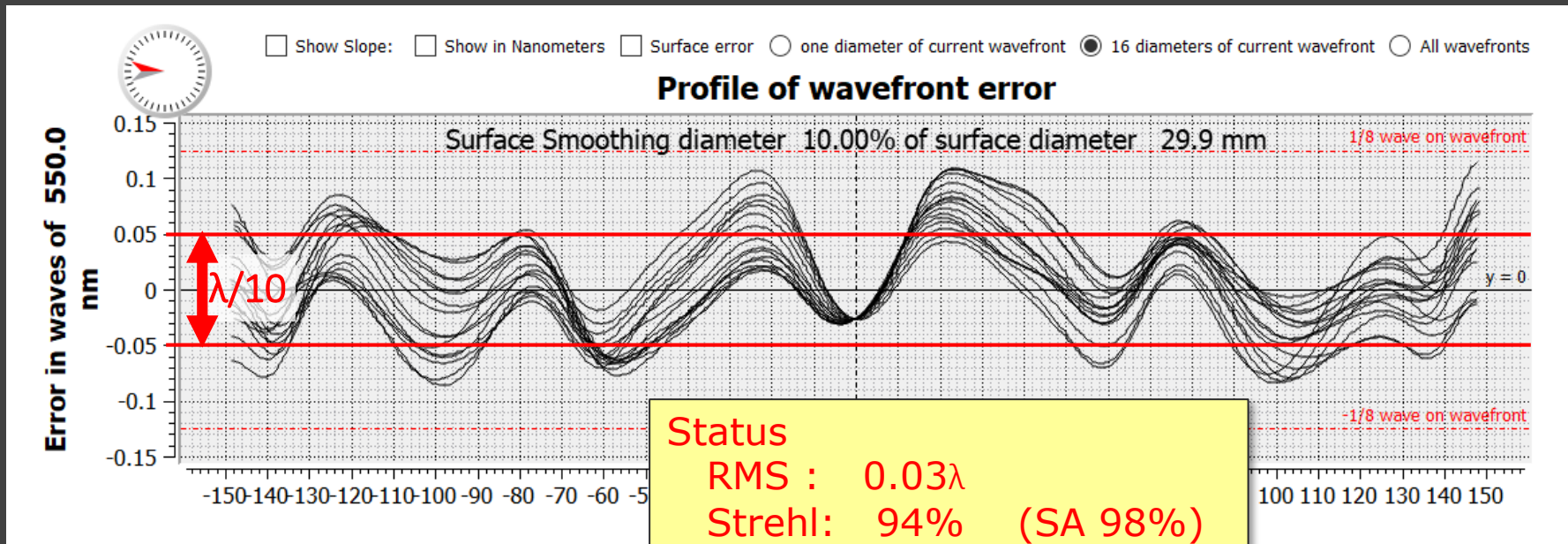


Retoucheren van zones





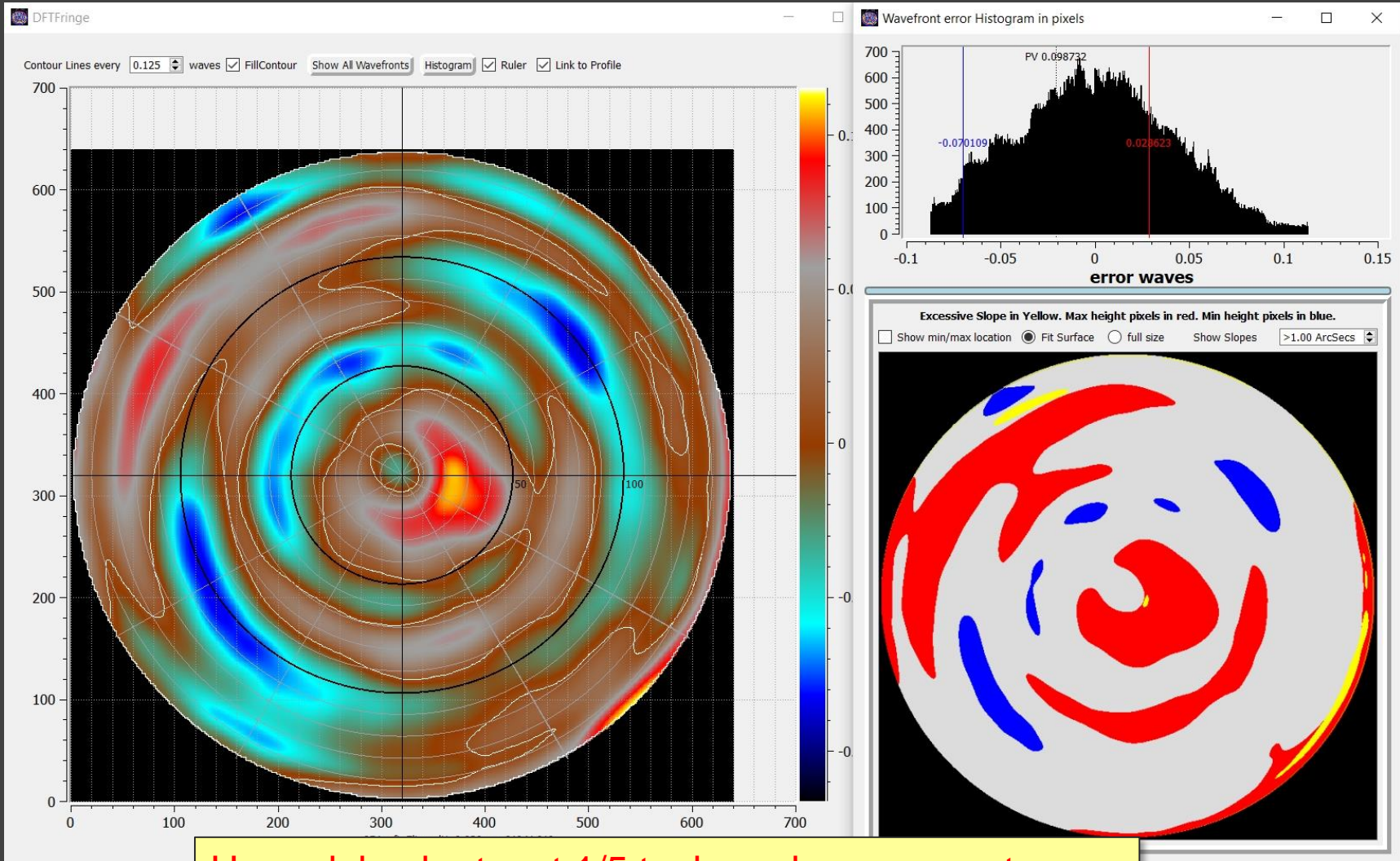
De laatste loodjes



- Analyses zakken in de ruis:
→ dus zorgvuldiger meten en evt. filteren
- Spreiding is ongeveer net zo groot als de afwijkingen
→ verder gaan met lokaal retoucheren (1/5 tool)



De laatste loodjes



Hoge delen kort met 1/5 tool, en dan weer meten...