Cleaning a mirror
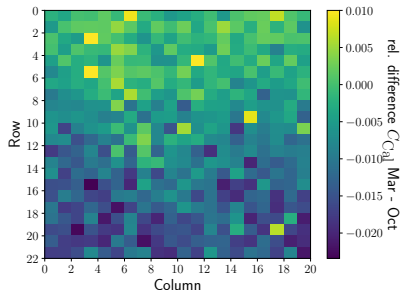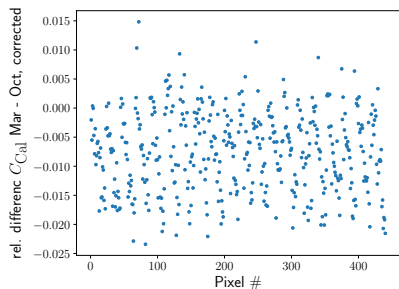
Joachim Debatin

May 9, 2019

The third XY-Scanner campaign
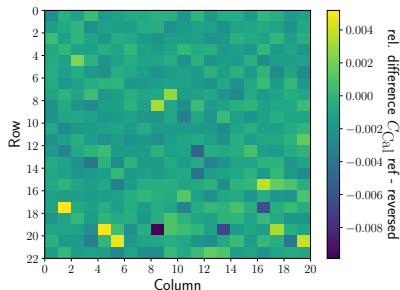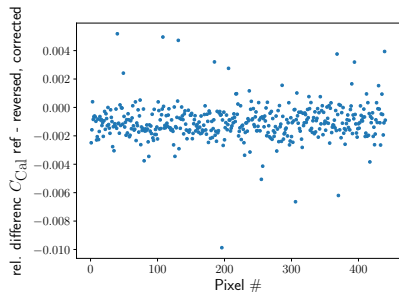
- ▶ Measurements taken at LL 3+4, CO 3+4, HEAT 1-3
- ▶ XY-Scanner built at LA 3 and LA 4 (50 %)
- ▶ Mirror of LL 4 cleaned on April 5th
- ▶ . . .

Long term stability

- ▶ Comparison of two identical measurements from two campaigns (March and October 2018)
- ▶ Corrected for the change in Cal A
- ▶ Hint for the accumulation of dust on the mirror
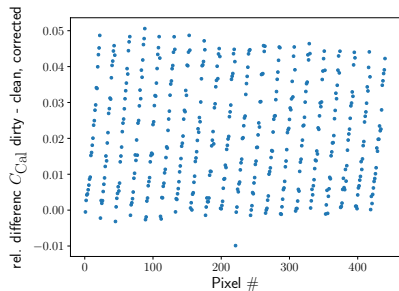
Short term stability

- ▶ Comparison with reversed measurement in same night
- ▶ Corrected for the change in Cal A
- ▶ Made to check if drifting of calibration affects our measurements

Cleaning a mirror
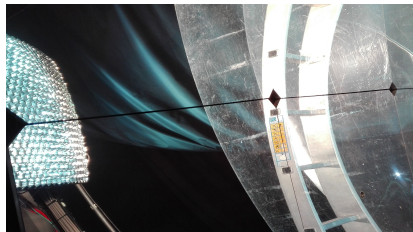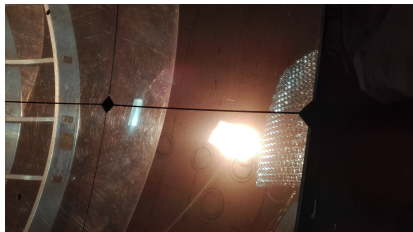
- ▶ LL 4, April 5th
- ▶ Cleaned with distilled water and the blown dry with nitrogen
- ▶ Greasy film from the air condition can't be removed by this procedure

Cleaning a mirror
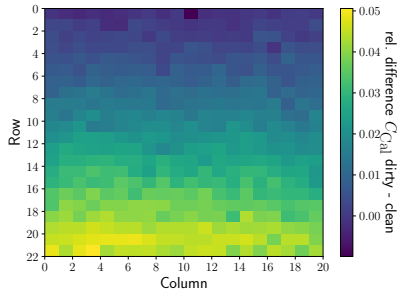
- ▶ Up to 5 % effect depending on position on mirror
- ▶ The effect should only come from absorption as the XY-Scanner is blind to changes of the point spread function
- ▶ Plans for a collimated light source exist

~~Clean~~ Quick and Dirty point spread function
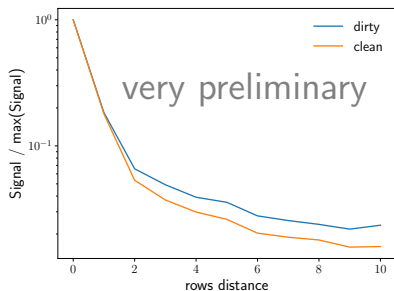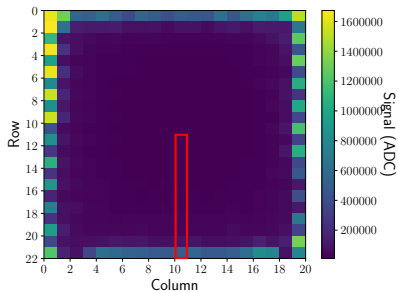
- ▶ We have ten flashes in the center at the beginning and the end of every run
- ▶ Use the camera shadow to test for scattering
- ▶ Cumulative of many "point spread functions"
- ▶ Better wait for collimated light source

Conclusions

- ▶ Built 6.5 new XY-Scanners, total: 8.5
- ▶ Measurements at 7 telescopes
- ▶ Comparison of energyscale once I have a preliminary calibration database
- ▶ Cleaning a mirror makes a difference of 5 % for the dirtiest part (absorption only)
- ▶ With a planed collimated lightsource we can also measure the effect on the point spread function