



DARK ENERGY
SURVEY

DES Star Flats



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DES-LBNL, April 2013



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Star Flat Calculation

Internal: Calculates flat field using only DES data (übercal)

Parameterizes the flat

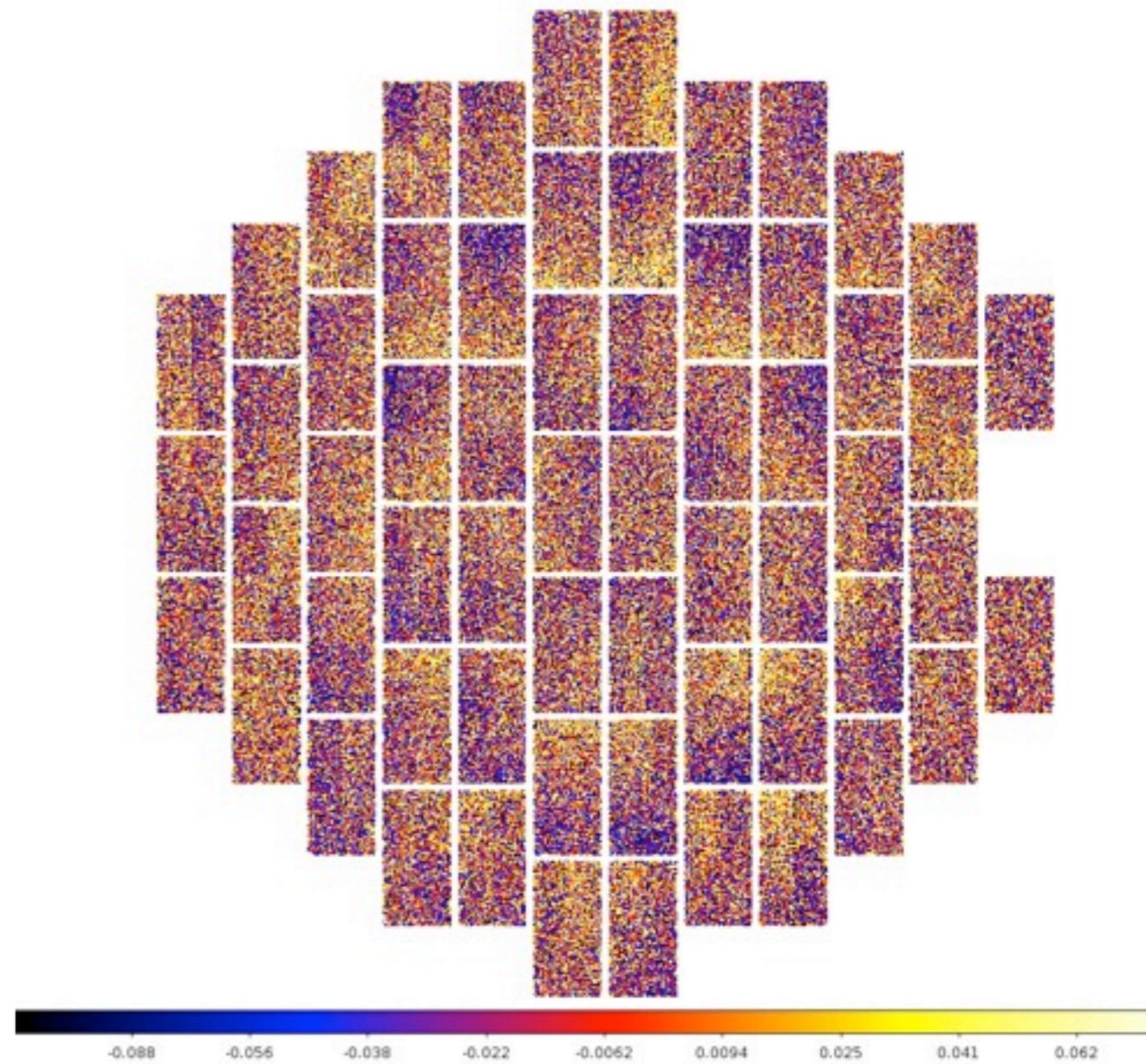
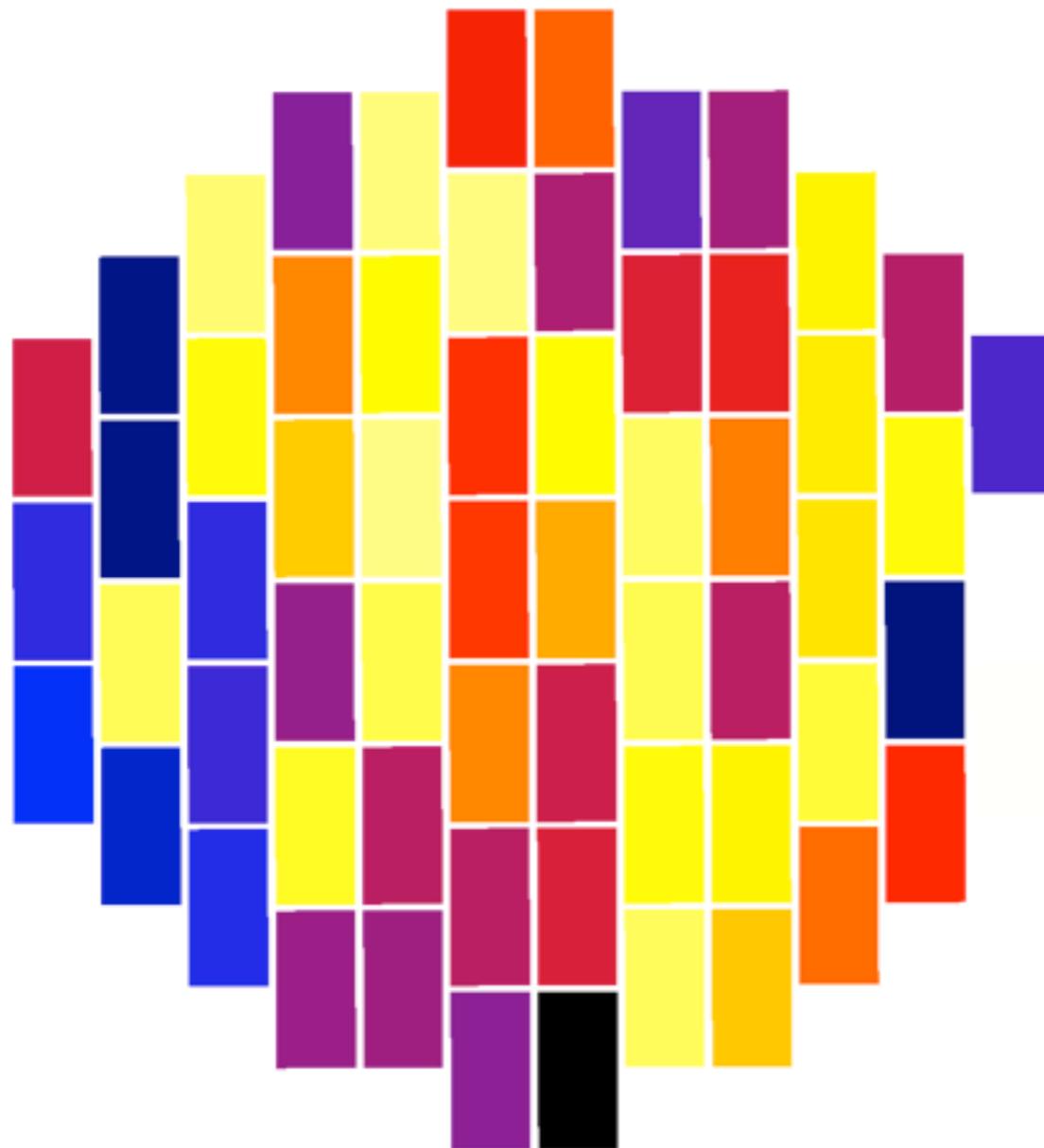
- ★ 1 ZP per observation (to account for observing conditions)
- ★ 1 ZP per CCD or amplifier
- ★ Position-dependence across each chip (optional)
 - ★ $Ax + By$
- ★ Position-dependence across the focal plane (optional)
 - ★ $Ax + By + Cxy + Dx^2 + Ey^2 + Fx^2y + Gxy^2 + Hx^2y^2 + Ix^3 + Jy^3$
 - ★ $Ar + Br^2 + Cr^3 + Dr^4$

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Simple 1 ZP per chip

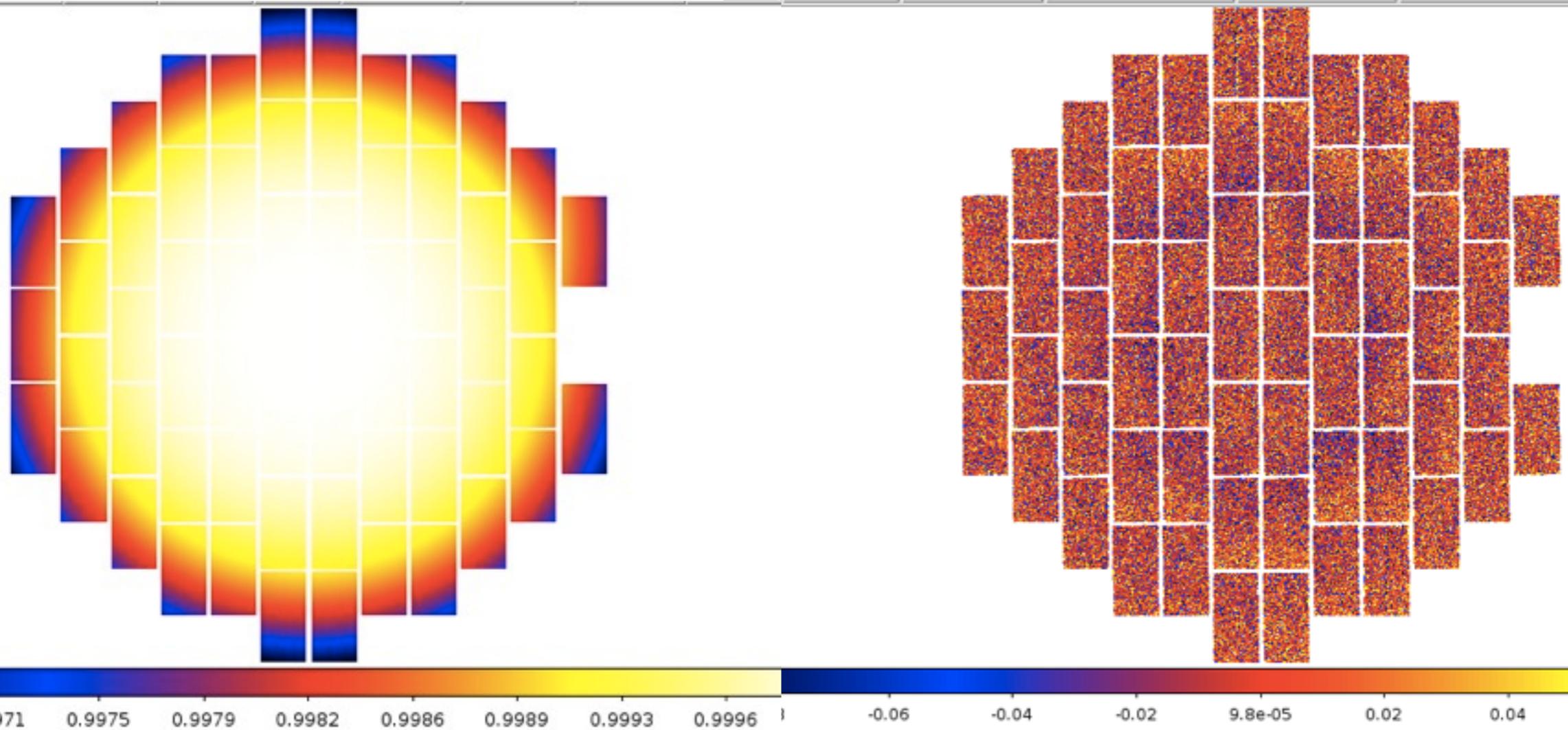


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Radial Parameterization

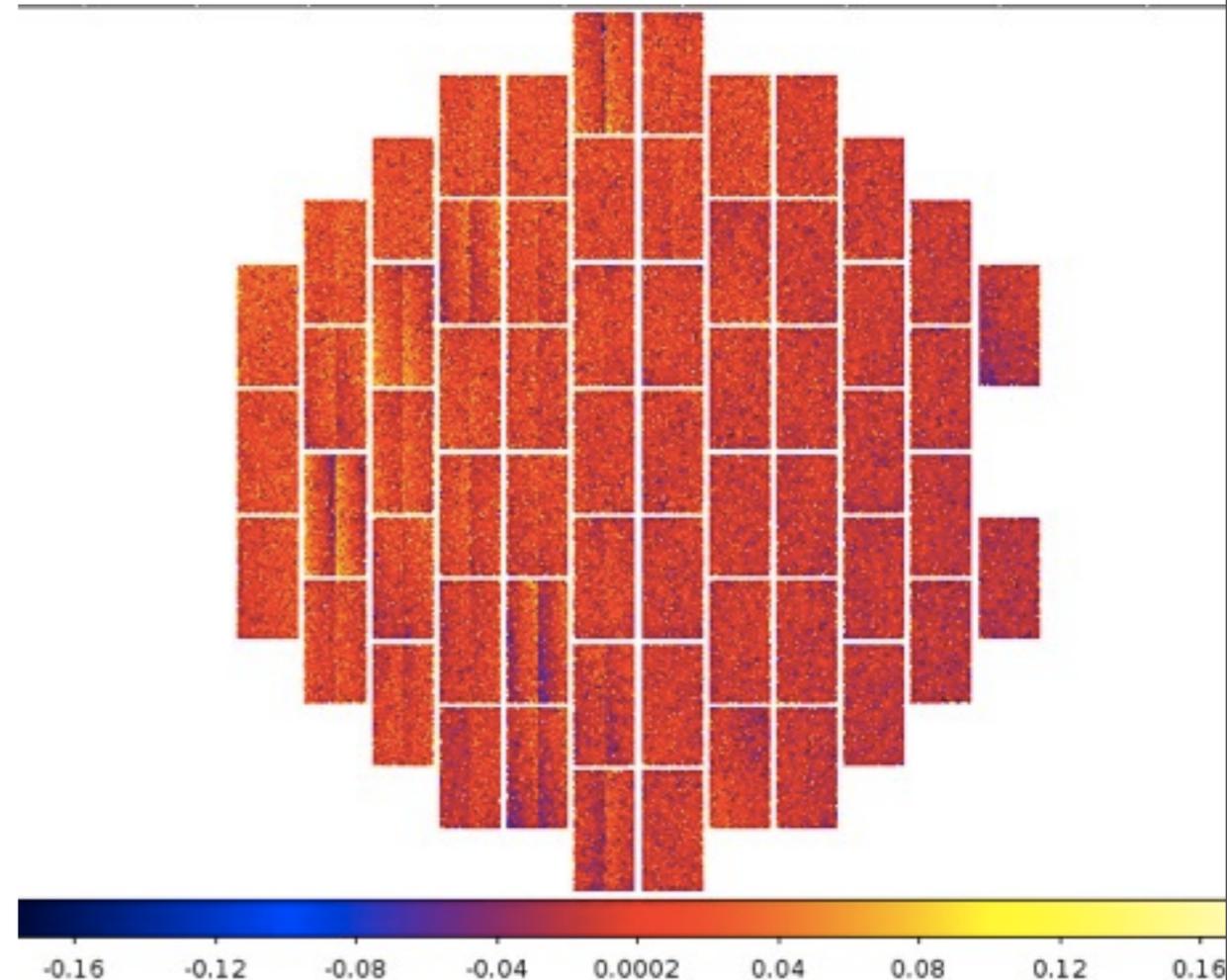
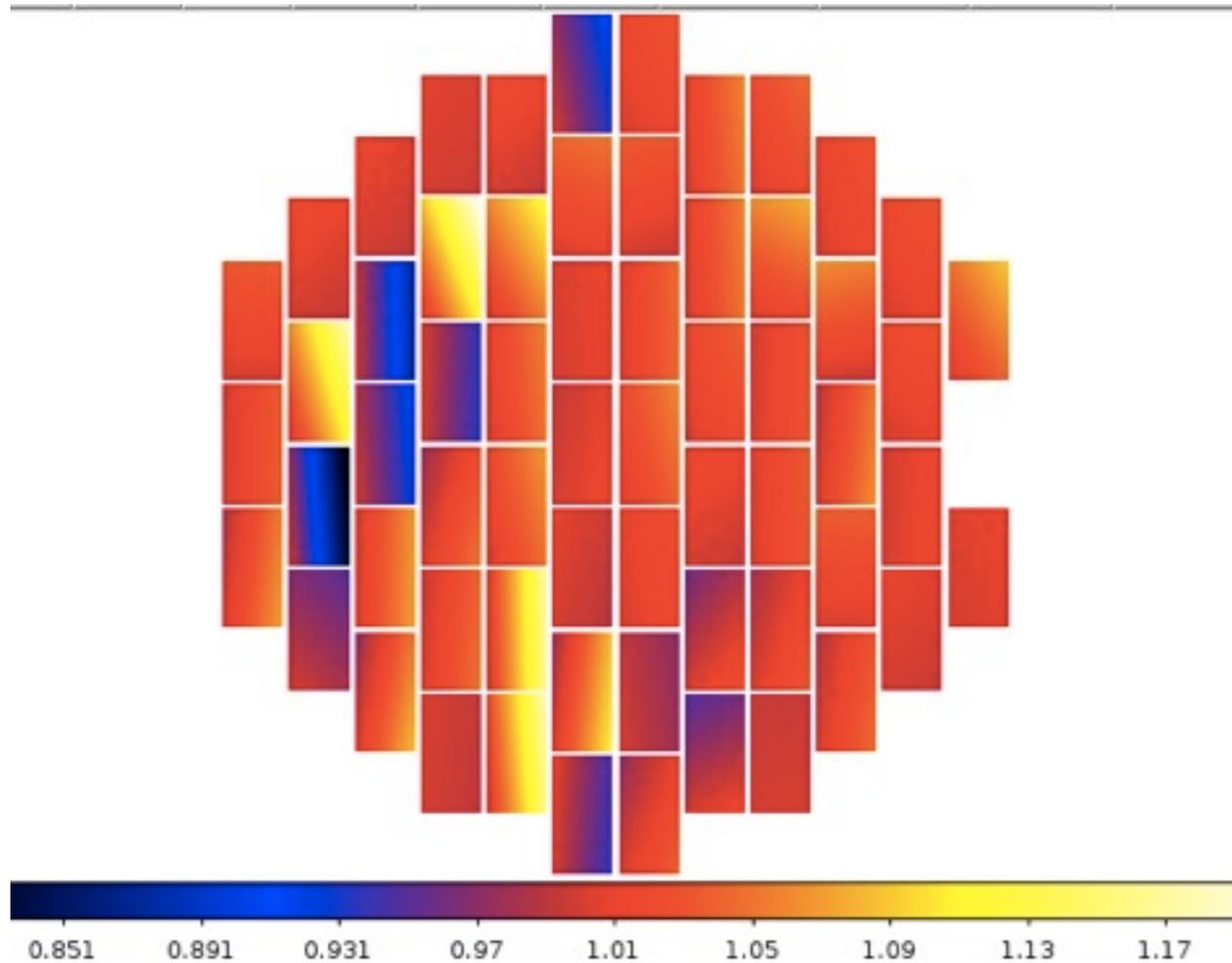


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Parameterization per chip (ZPs per amplifier, not chip? No...)



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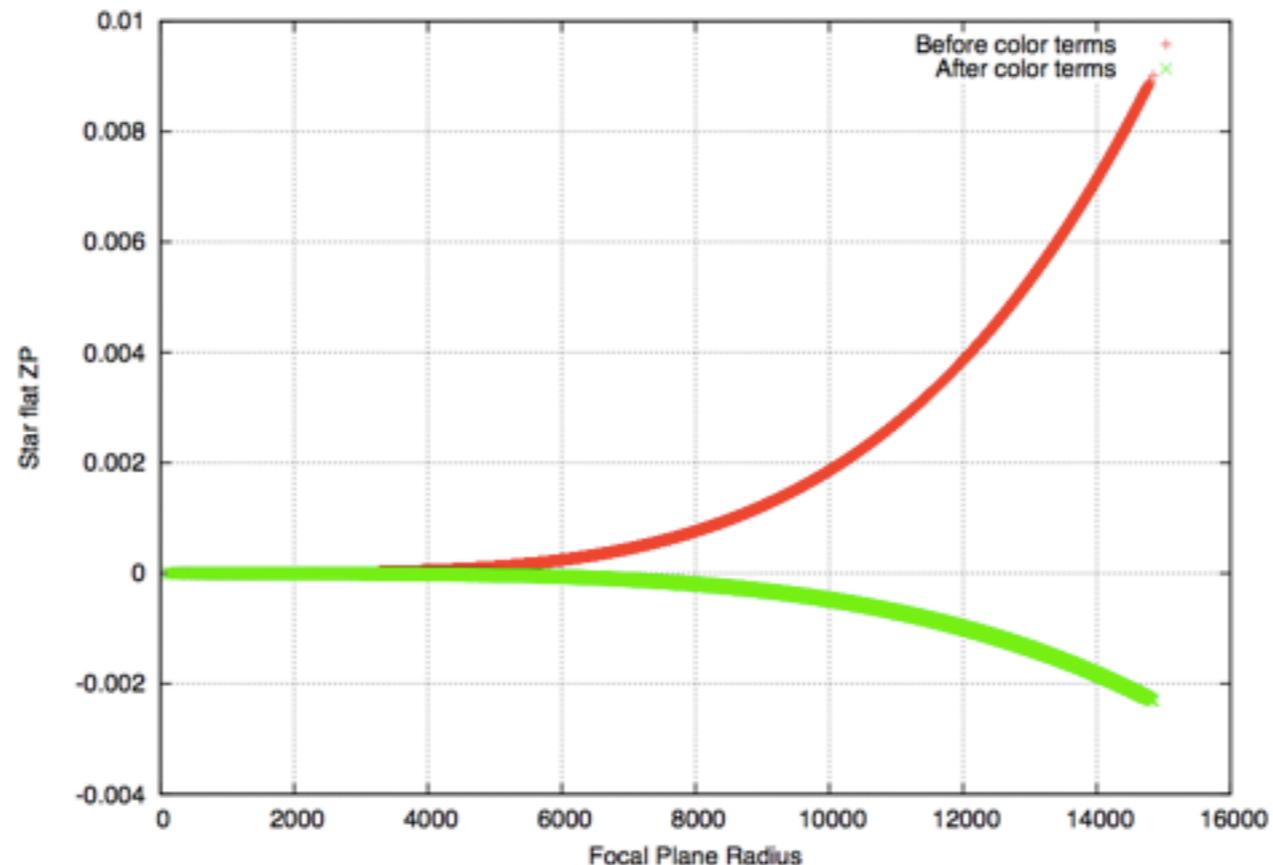
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Relationship with color terms?

Are the star flats and color terms capturing the same effect?

- ★ Calculate the star flat with “SDSS” magnitudes, using filter measurements vs. focal plane position
- ★ If so, we need to apply the star flats before calculating the color terms!!

★ First step:



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Conclusions

Fitting a parameterization may not be ideal

- ★ Hard to capture the donut, individual CCD variations, without too many DOF
- ★ The fit convergence can be picky; need to run iteratively.

RMS of the observations goes from $\sim 8\%$ to $\sim 5\%$ in g .

Need to sort out different effects, e.g. color terms, pupil ghost.

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