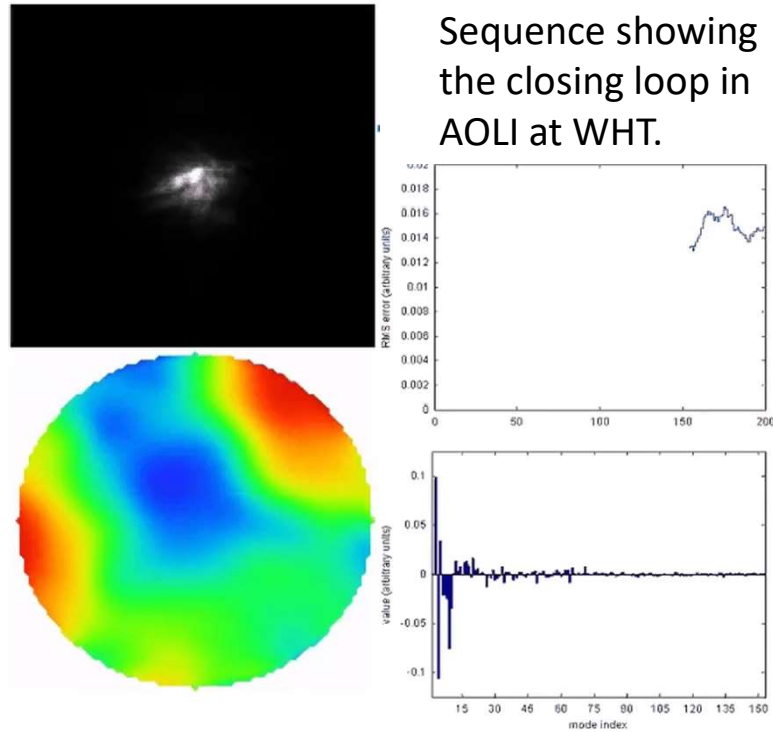


# PROTOTYPE OF AN ADAPTIVE OPTICS SYSTEM FOR INTERMEDIATE SIZE TELESCOPES

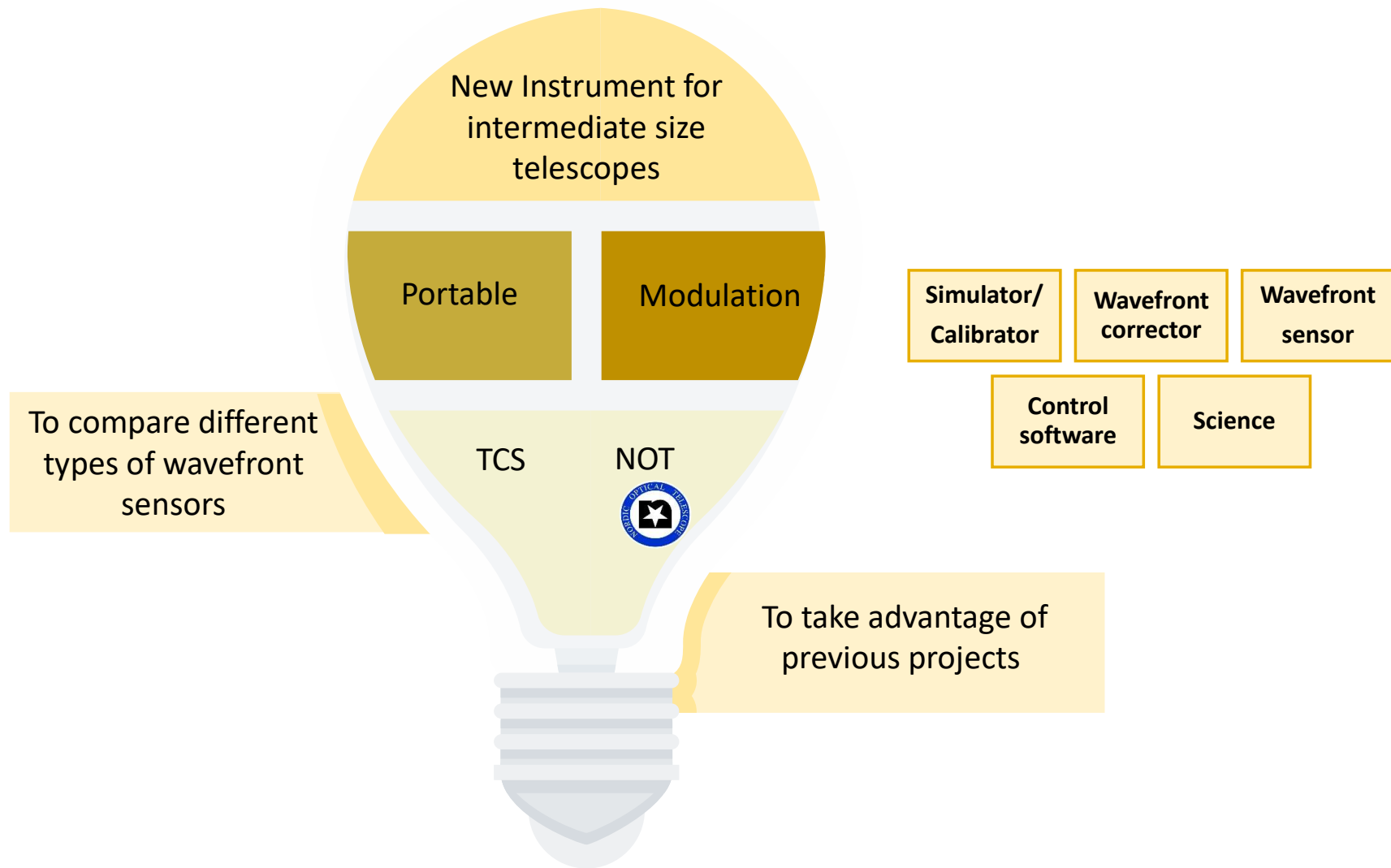
Esther Soria Hernández  
PhD Student IAC



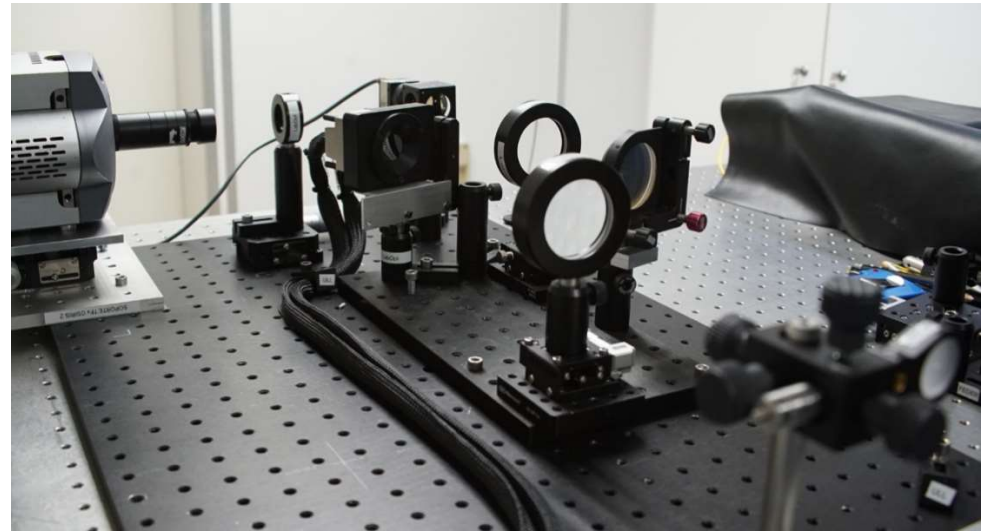
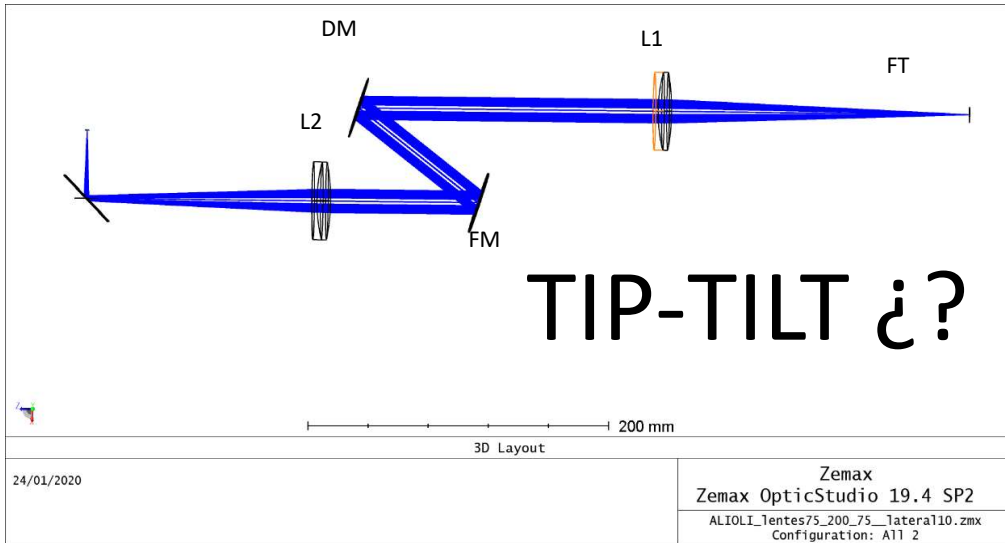
# AOLI (Adaptive Optics Lucky Imager)



Laboratory and telescope demonstration of the TP3-WFS for the adaptive optics segment of AOLI. C. Colodro-Conde et al. MNRAS 000, 1{15 (2017)

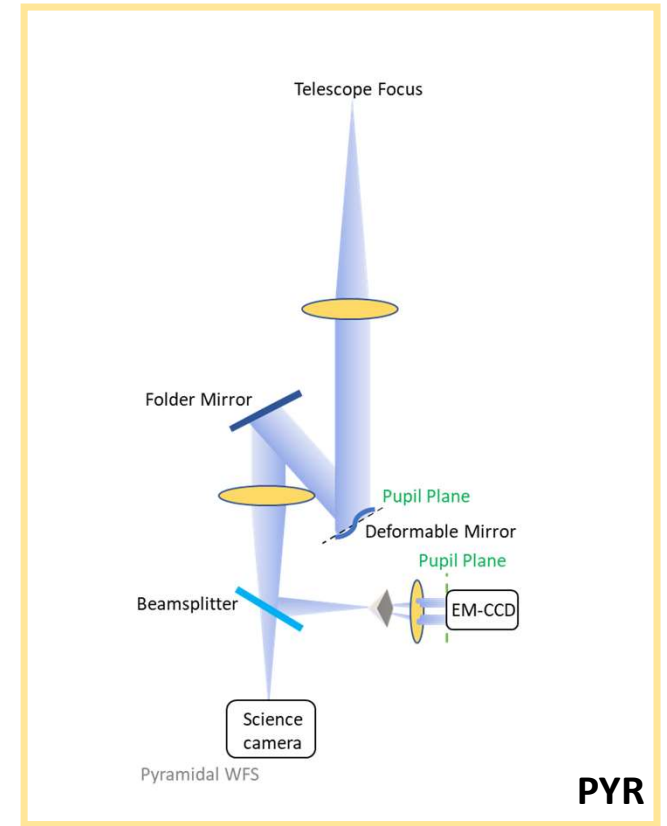
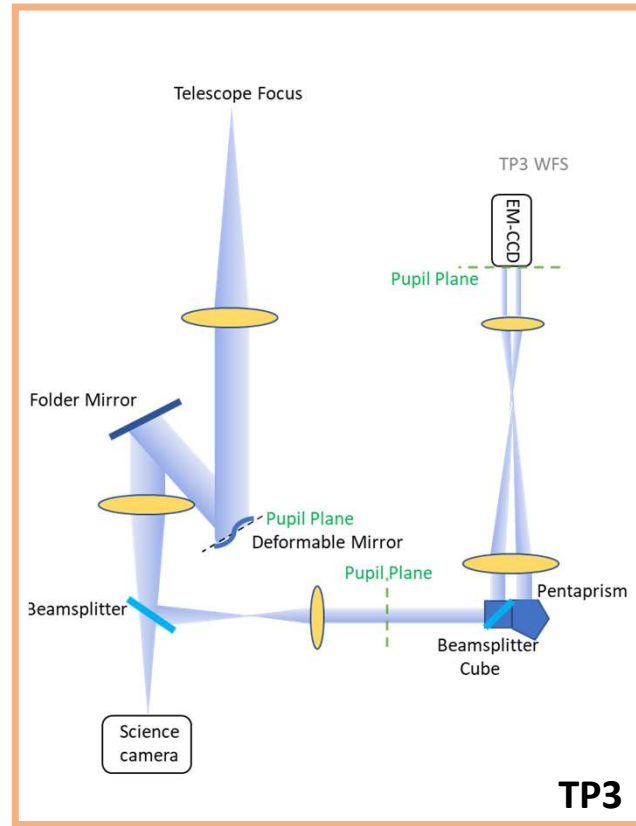
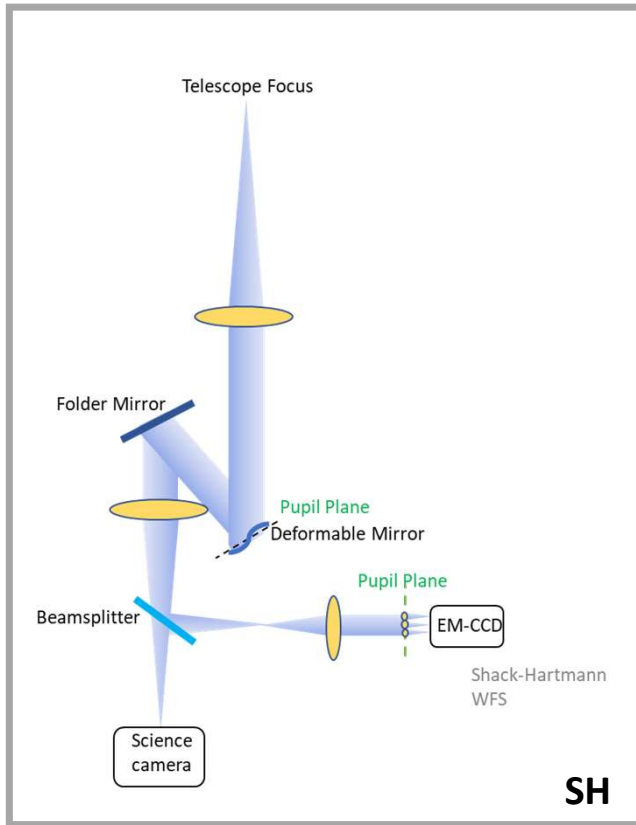


# Wavefront corrector



Number of actuators	88
Pupil diameter	20.0 mm
Pitch	2.5 mm
Mirror best flat in close loop	7.0 nm RMS

# Wavefront sensor



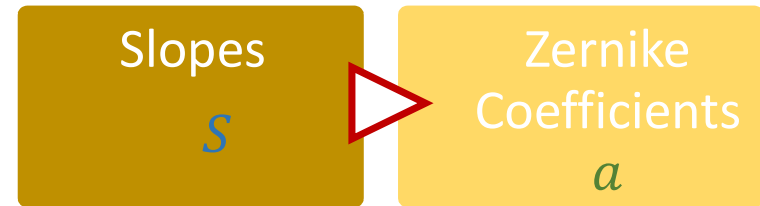
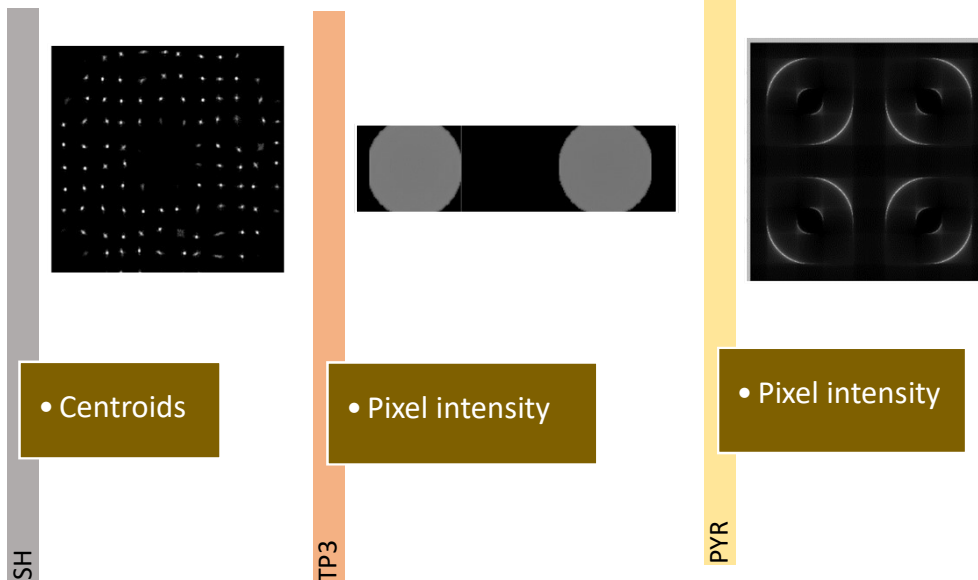
# Control software



## INPUT

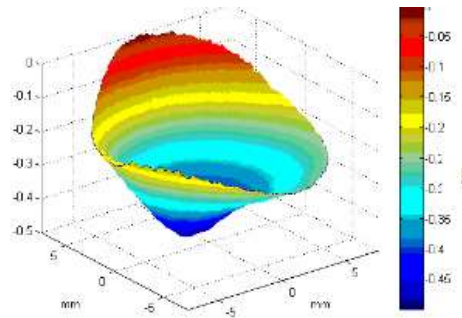
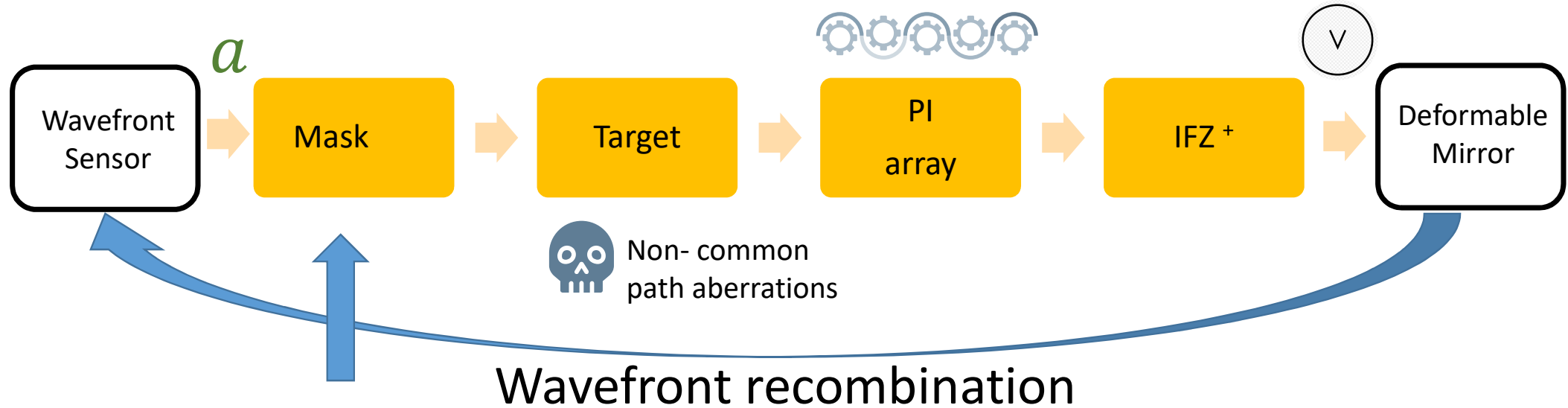
## OUTPUT

Camera Readout

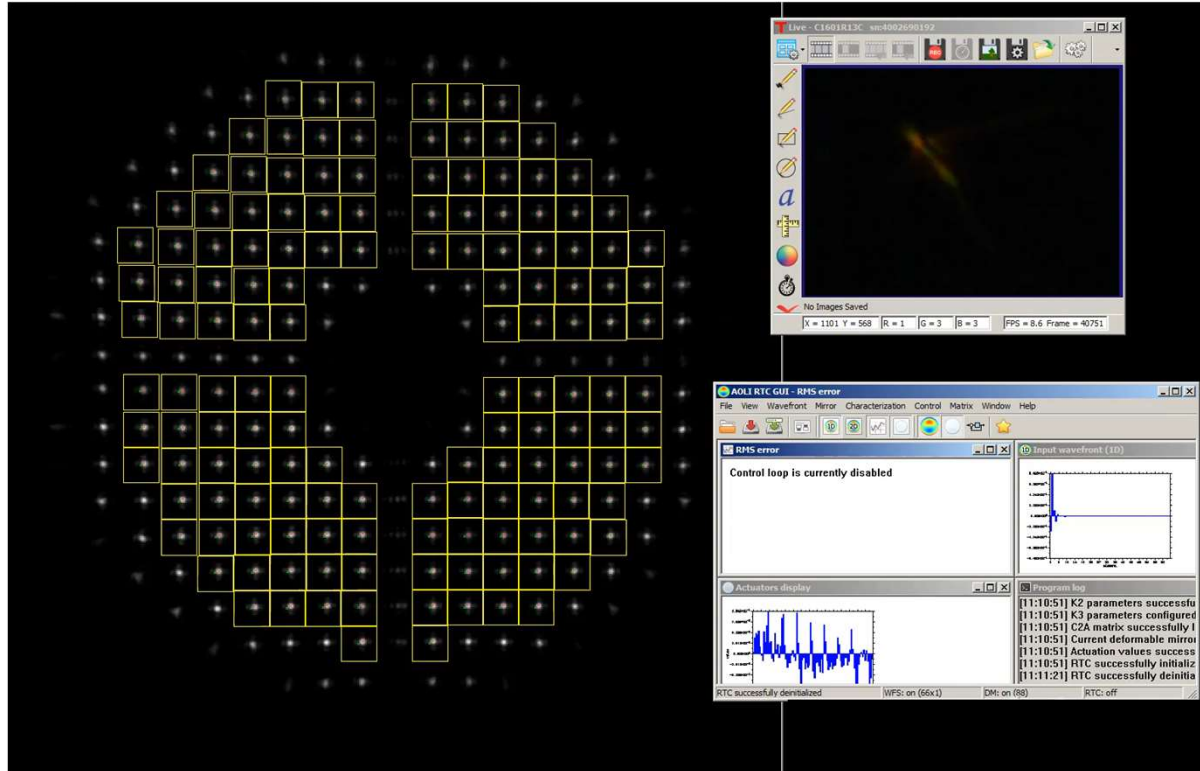


$$Z = \begin{bmatrix} \frac{\partial \bar{Z}_1(x_1, y_1)}{\partial x} & \frac{\partial \bar{Z}_2(x_1, y_1)}{\partial x} & \dots & \frac{\partial \bar{Z}_n(x_1, y_1)}{\partial x} \\ \frac{\partial \bar{Z}_1(x_2, y_2)}{\partial x} & \frac{\partial \bar{Z}_2(x_2, y_2)}{\partial x} & \dots & \frac{\partial \bar{Z}_n(x_2, y_2)}{\partial x} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{\partial \bar{Z}_1(x_i, y_i)}{\partial x} & \frac{\partial \bar{Z}_2(x_i, y_i)}{\partial x} & \dots & \frac{\partial \bar{Z}_n(x_i, y_i)}{\partial x} \\ \frac{\partial \bar{Z}_1(x_1, y_1)}{\partial y} & \frac{\partial \bar{Z}_2(x_1, y_1)}{\partial y} & \dots & \frac{\partial \bar{Z}_n(x_1, y_1)}{\partial y} \\ \frac{\partial \bar{Z}_1(x_2, y_2)}{\partial y} & \frac{\partial \bar{Z}_2(x_2, y_2)}{\partial y} & \dots & \frac{\partial \bar{Z}_n(x_2, y_2)}{\partial y} \\ \vdots & \vdots & \ddots & \vdots \\ \frac{\partial \bar{Z}_1(x_i, y_i)}{\partial y} & \frac{\partial \bar{Z}_2(x_i, y_i)}{\partial y} & \dots & \frac{\partial \bar{Z}_n(x_i, y_i)}{\partial y} \end{bmatrix}$$

$$a = Z^+ S$$



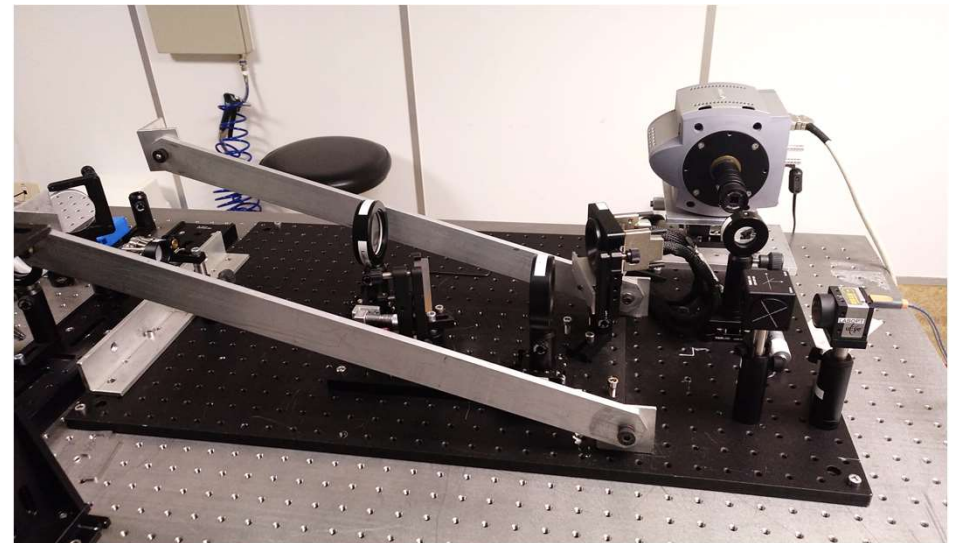
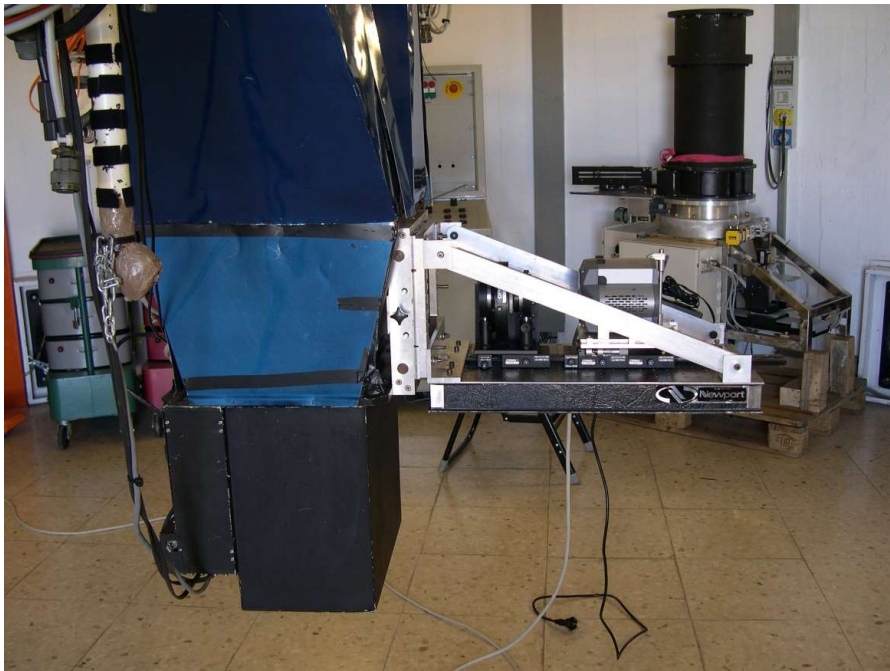
Interferometric characterization



A PICTURE IS  
WORTH A THOUSAND  
WORDS



# Carlos Sanchez Telescope (TCS)



# THANKS !

Do you have any questions?

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+34 922



**WAVEFRONT  
SENSING  
IN THE VLT/ELT  
ERA V**

**13TH - 15TH  
OCTOBER  
2020**

**AO WORKSHOP  
WEEK II**

