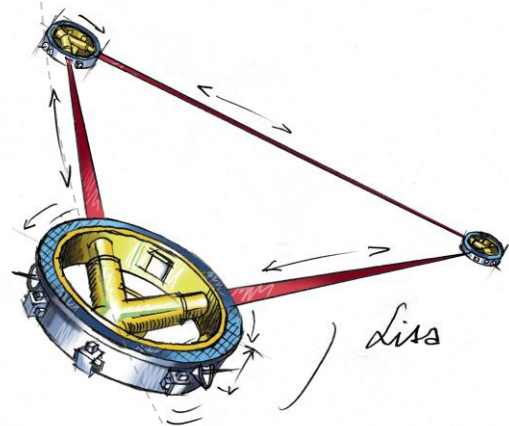


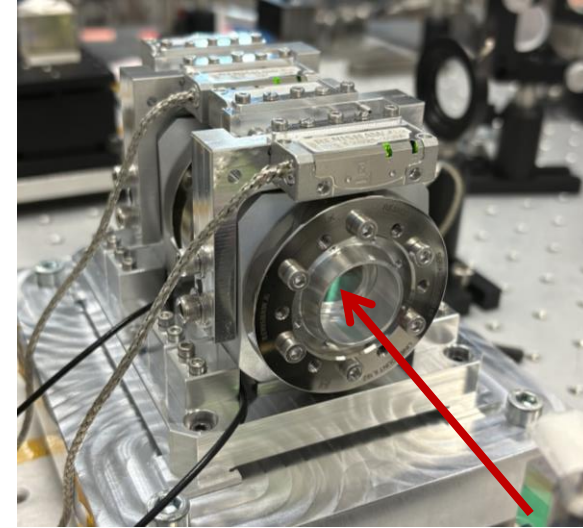
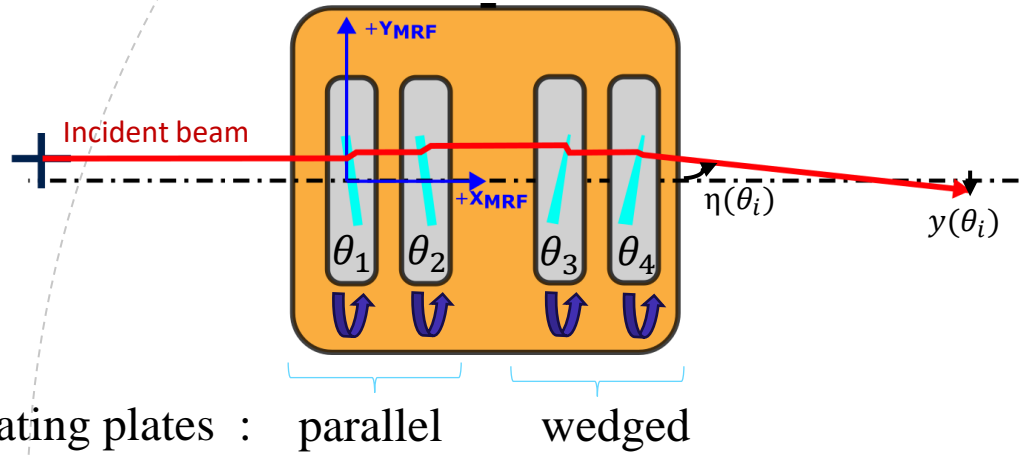
# MATHIEU RIARD

## RESEARCH ENGINEER

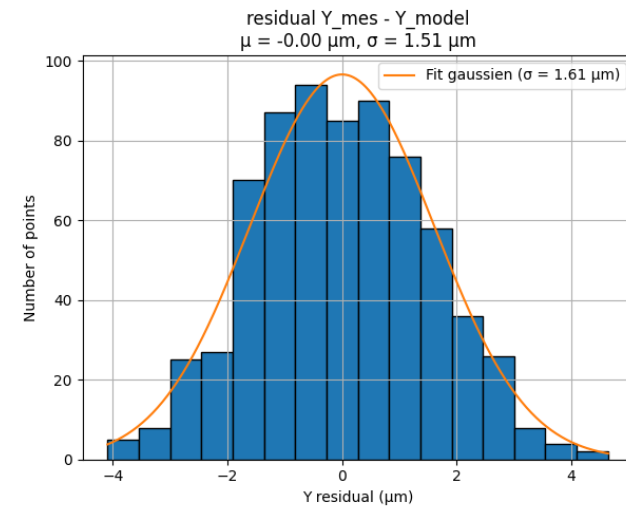
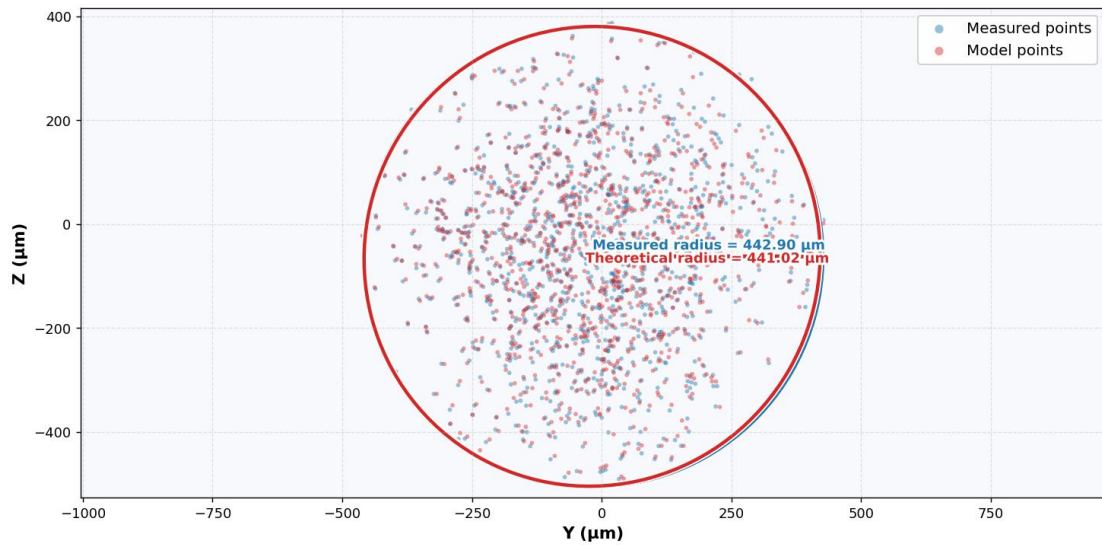
## LISA PROJECT



# BSIM SUBSYSTEM : BPAM (BEAM POINTING AND ALIGNMENT MECHANISM)

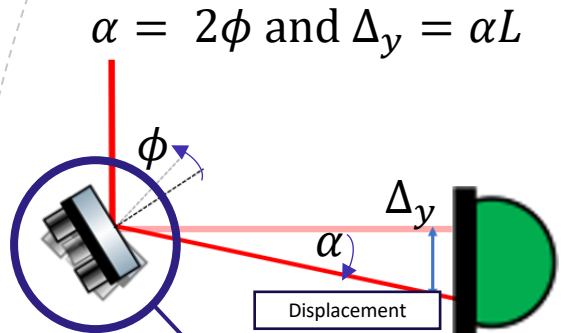


Comparison of beam propagation with the paraxial model across the entire operating range

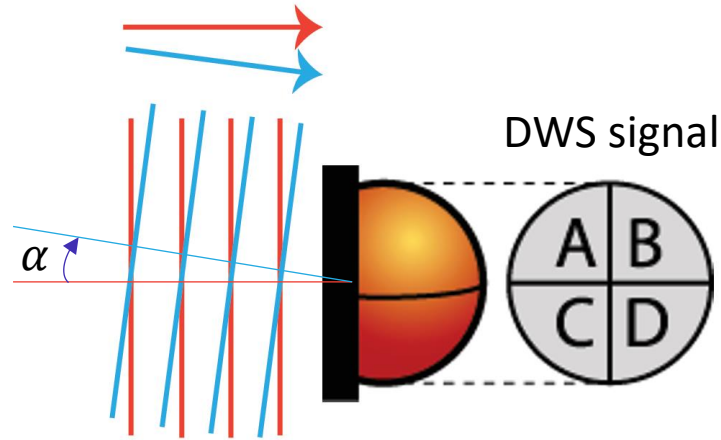


# BSIM SUBSYSTEM : PCS ( POSITIONING CONTROL SYSTEM )

Application : Differential-Wavefront-Sensing ( DWS ) Signals from Quadrant Photodiodes in Heterodyne Interferometers with Digital Phase-Locked-Loop Readout



2-axis motorised mirror mount = PCS



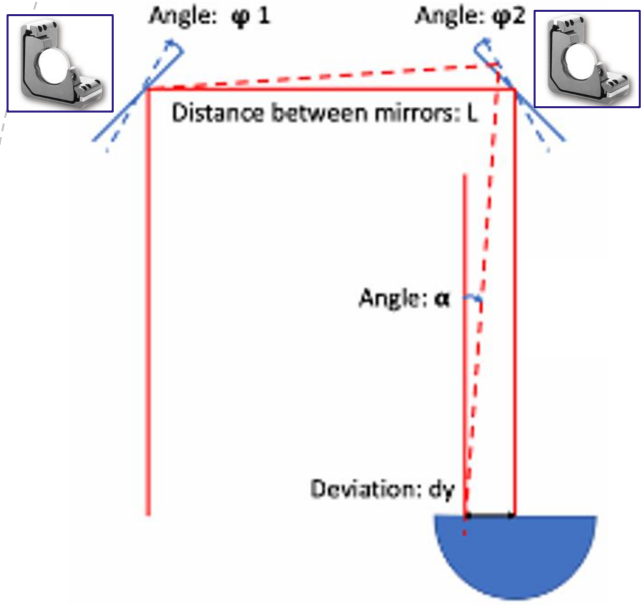
Calibration

*linear law : DWS  $\propto$   $\alpha$*

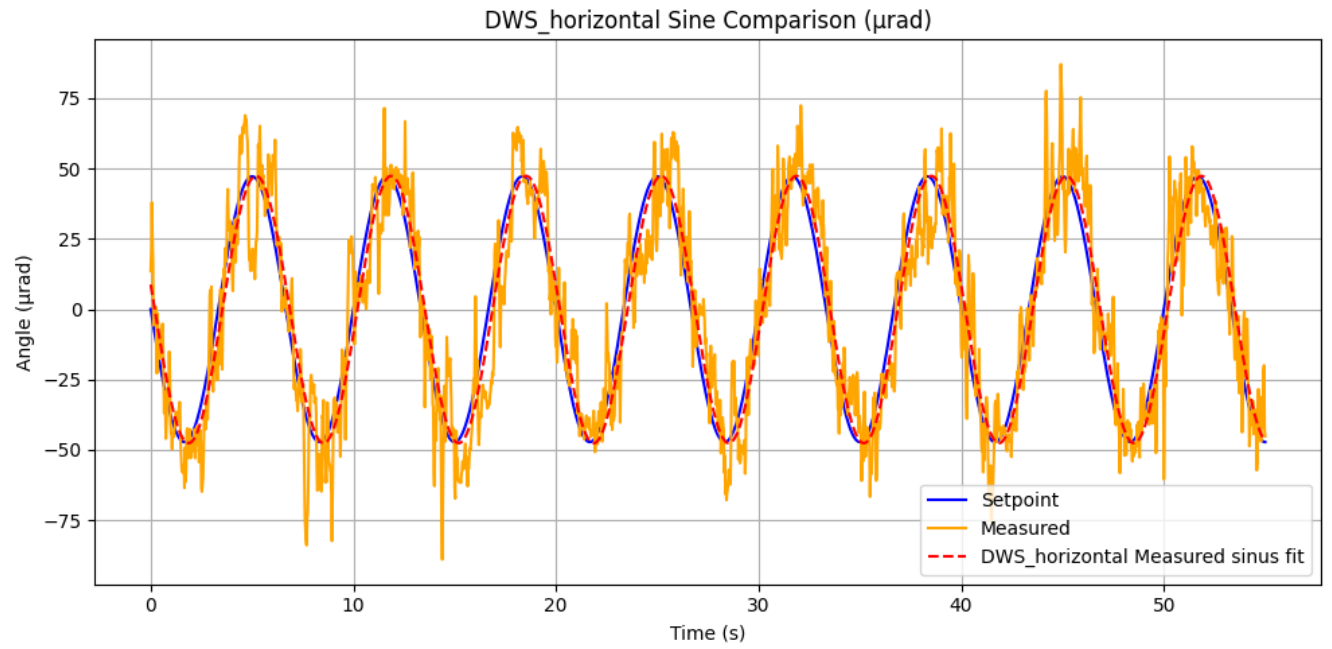
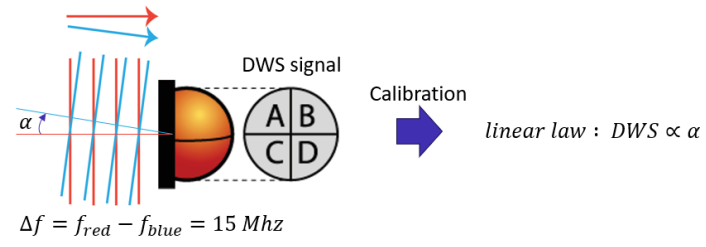
$\Delta f = f_{red} - f_{blue} = 15 \text{ Mhz}$   
 -> Heterodyne Interferometers

# BSIM SUBSYSTEM : PCS ( POSITIONING CONTROL SYSTEM )

Application : control the geometric angle  $\alpha$  of a beam using a feedback loop based on DWS signals and controllable mirrors



2 PCS = angle and displacement control



Input setpoint :  $\alpha * = \sin(2\pi t/T) T = 15s$



# THANK YOU !

