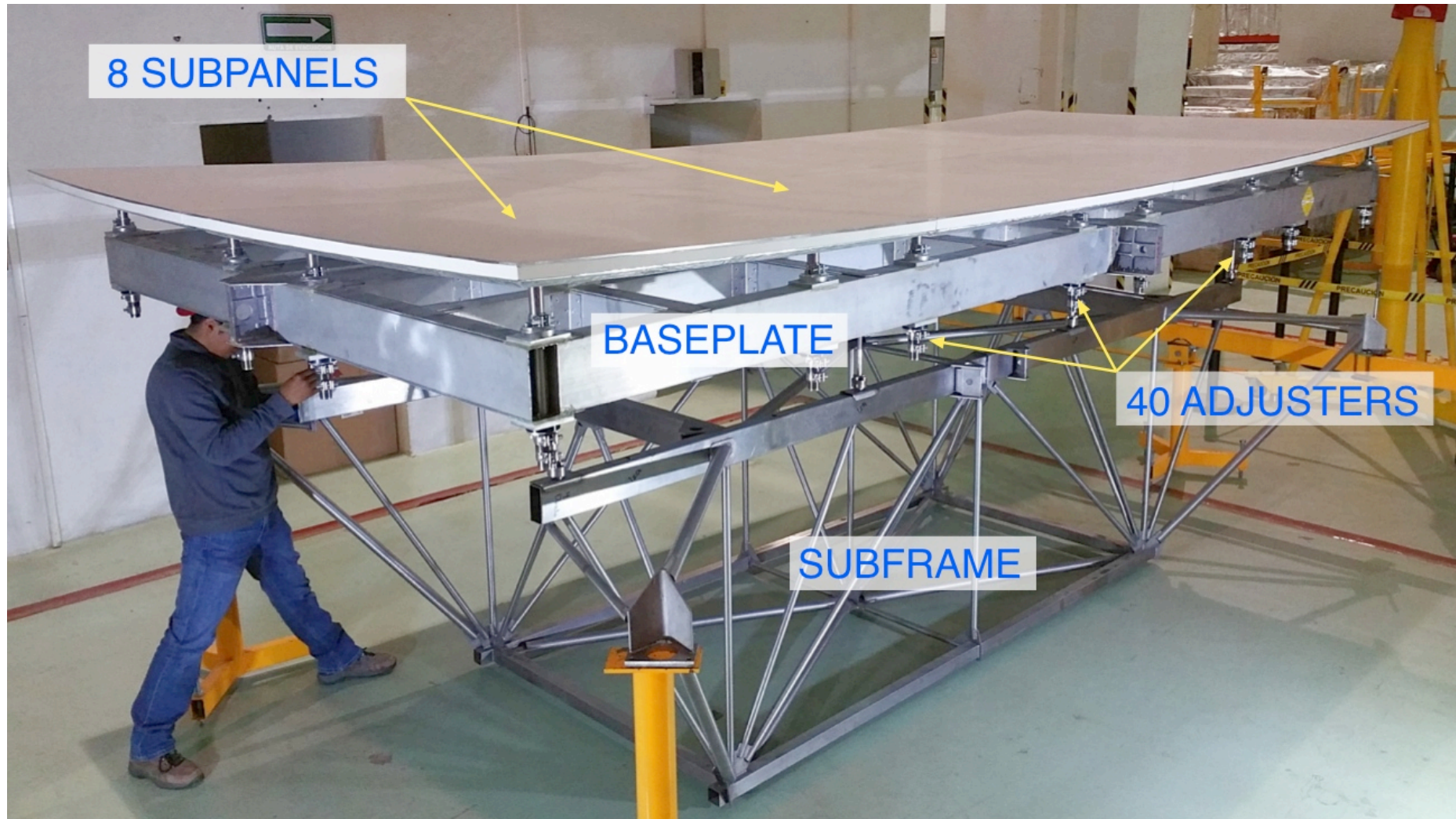




# LMT SEGMENT UPGRADE PROGRAM

David M. Gale [dgale@inaoep.mx](mailto:dgale@inaoep.mx)

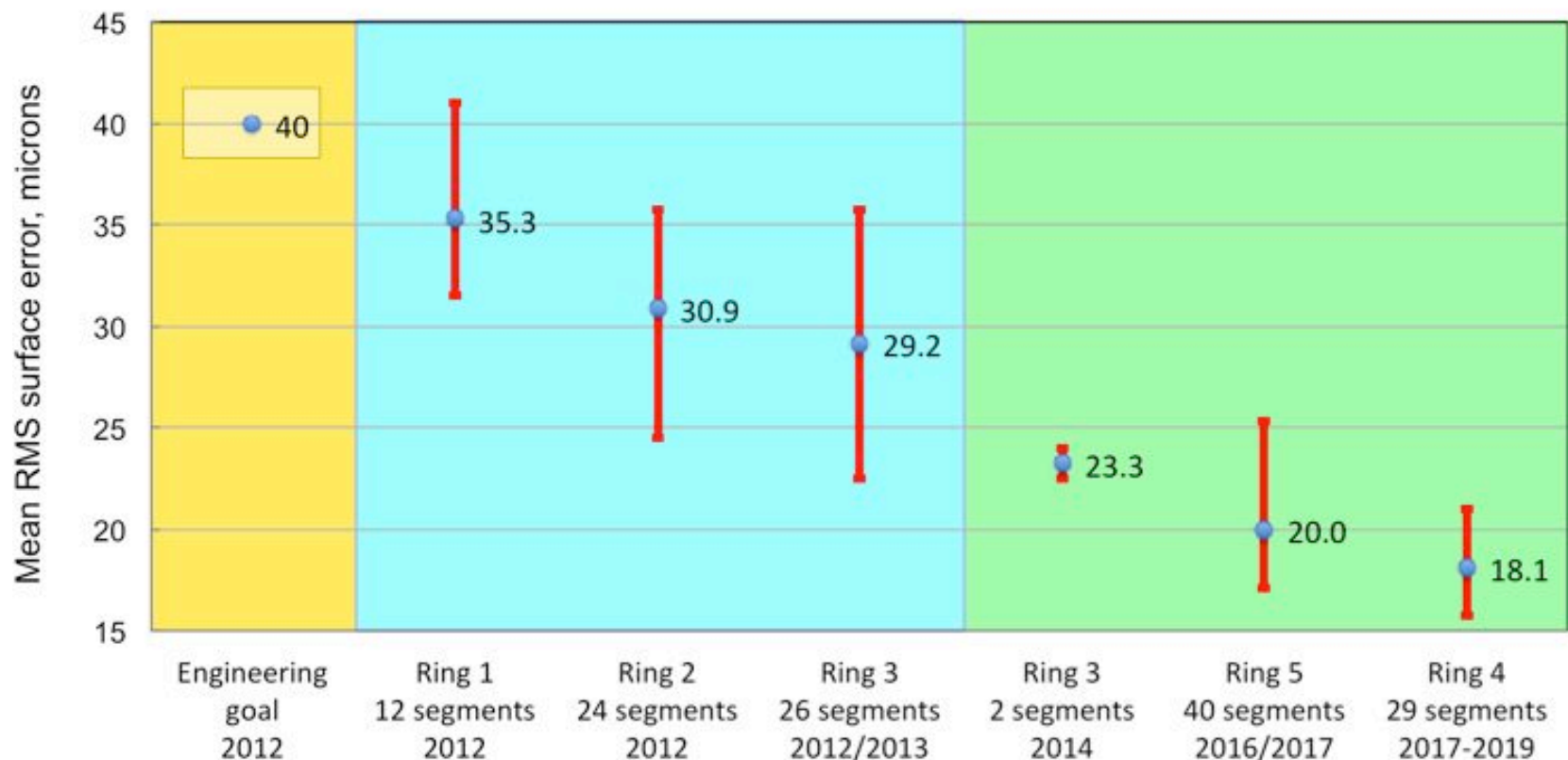
# LMT PRIMARY SURFACE SEGMENTS



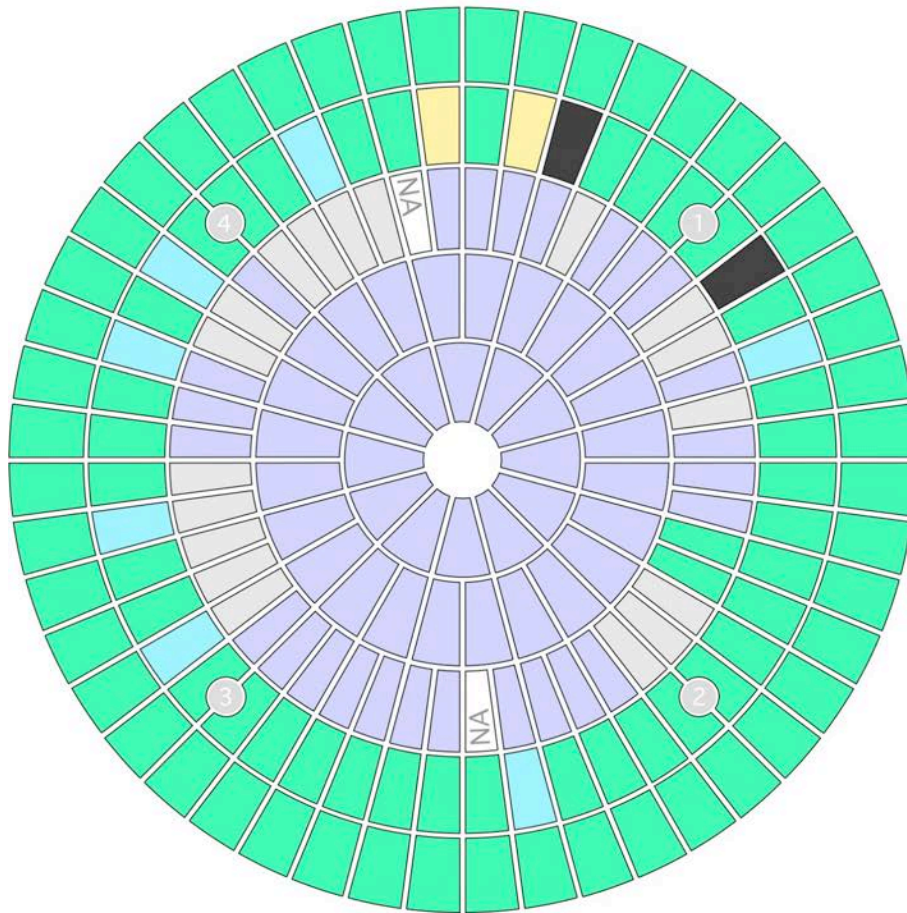


# WHY IS SEGMENT SURFACE ACCURACY IMPROVING?

- Laser trackers for segment metrology.
- Robust data fitting algorithms.
- Elimination of mechanical instability hotspots.
- Improved adjuster design.
- All-new components with stringent QC.
- Enhanced assembly procedures using LT alignment.

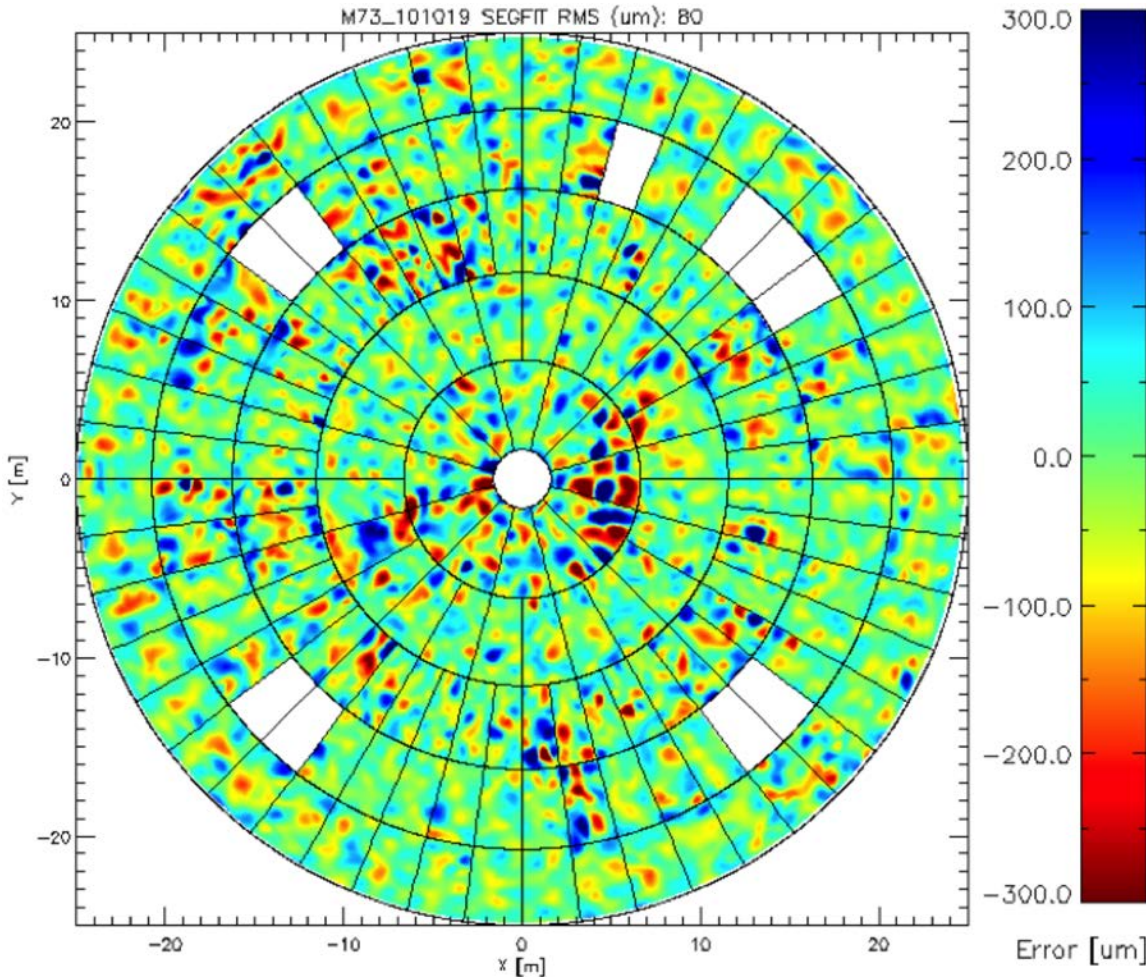


# LMT PRIMARY SURFACE SEGMENTS - December 2020



- R1-3: installed 2006/08, modified 2012/13
- R3: installed 2006/08
- R3: upgrade 2014
- R4: installed 2009/10
- R4: installed 2013
- R4: upgrade 2016-2019
- R4: cover plate
- R5: installed 2016/17

# LMT PRIMARY SURFACE SUBPANELS

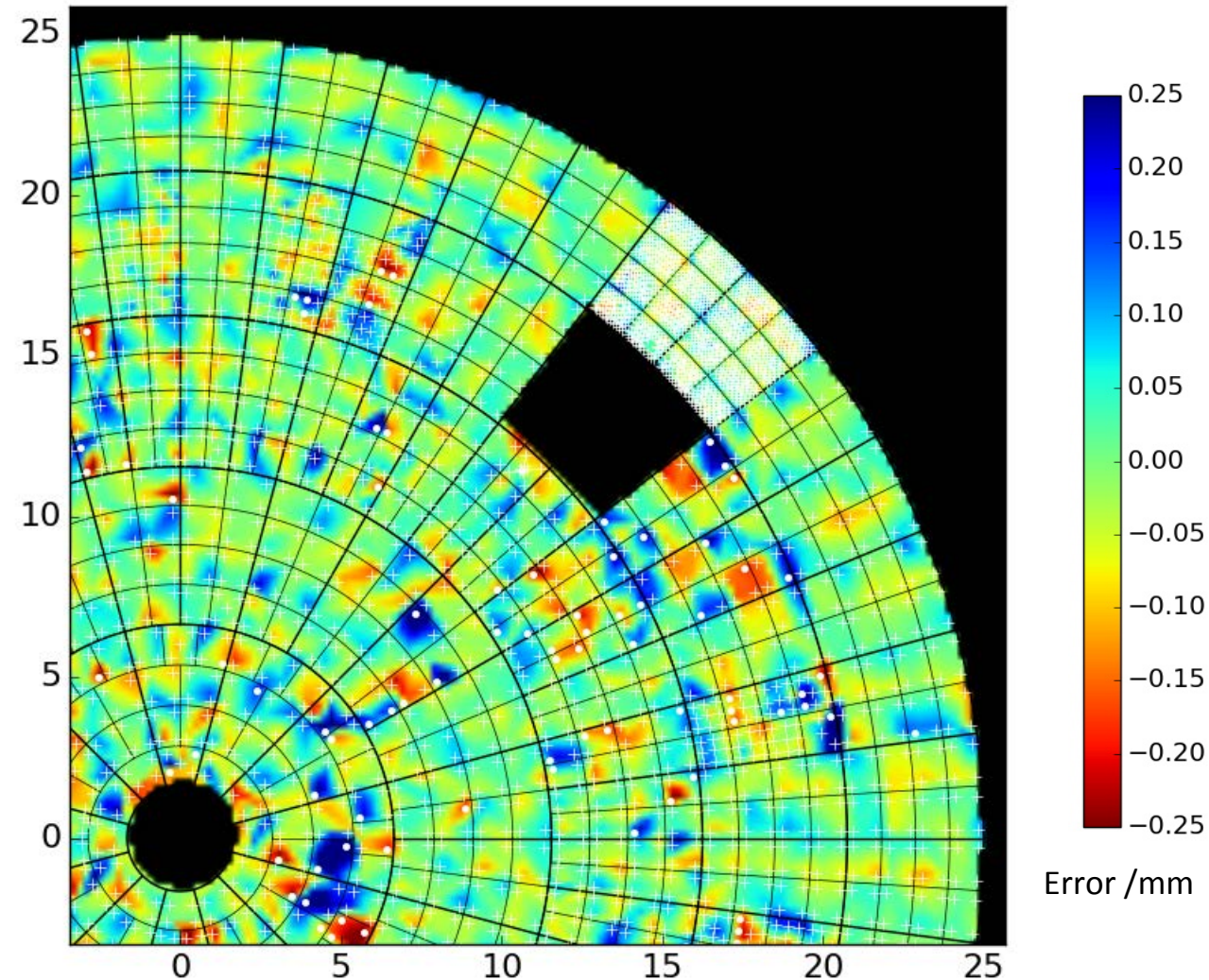


A single surface error map from photogrammetry data.

- Low-order aberrations removed.
- Point cloud adjusted to a model with all actuators set at their optimal positions.



# LMT PRIMARY SURFACE SUBPANELS



Averaging of residuals over multiple measurements:

- Helps identify alignment issues at the subpanel level.

SEGMENT UPGRADE PROGRAM  
INAOE Aspheric Surfaces Laboratory, Puebla.  
6 mechanics staff, 6 metrology staff.





# IS SEGMENT OVERHAUL DISRUPTIVE FOR OBSERVING?

