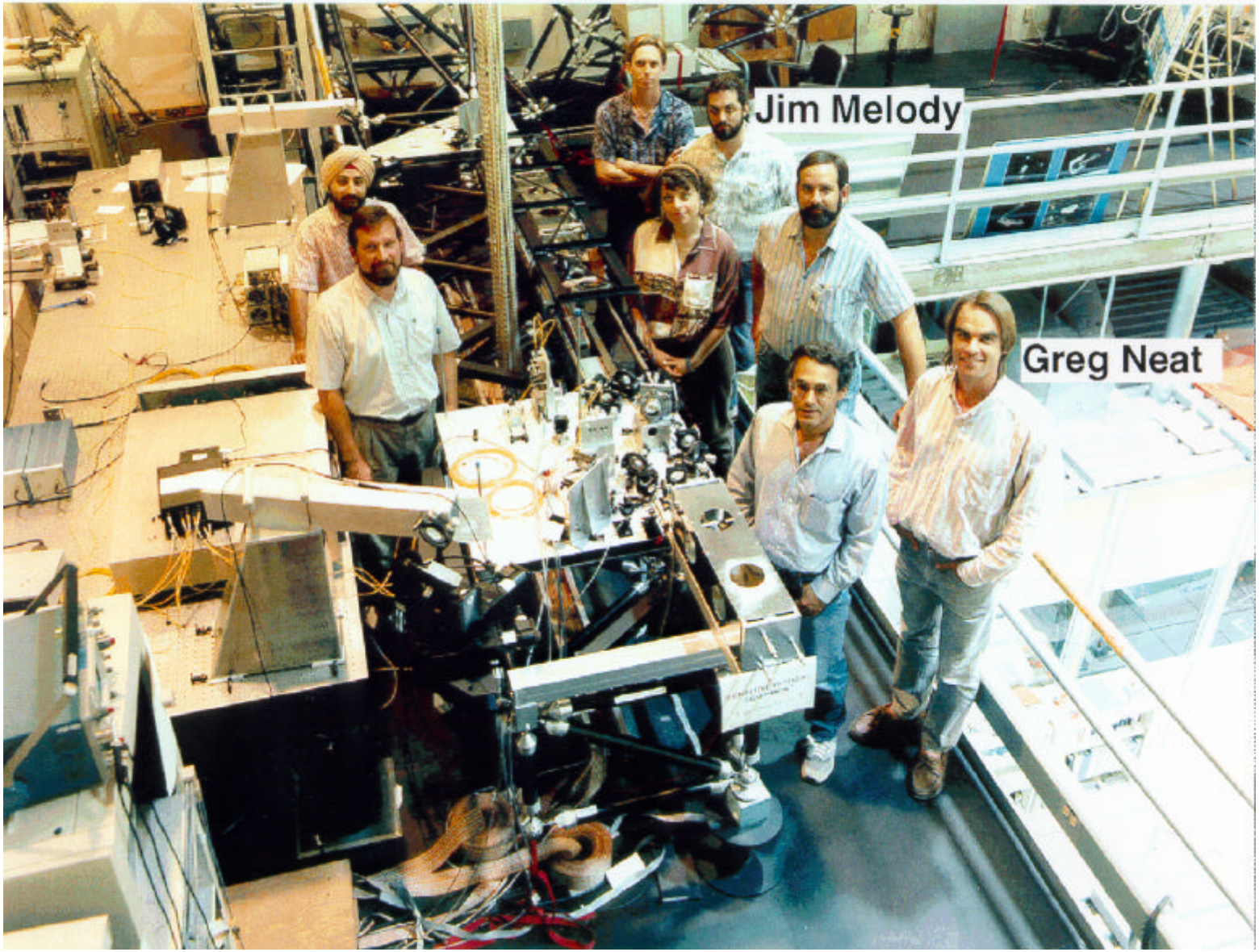
Integrated Modeling Methodology Validation Using the Micro-Precision Interferometer Testbed



MPI IMOS Modeling: Outline of Presentation

I. Objectives of Work

II. Approach

III. IMOS Model Methodology

- A. Model Description
- B. Control System Model

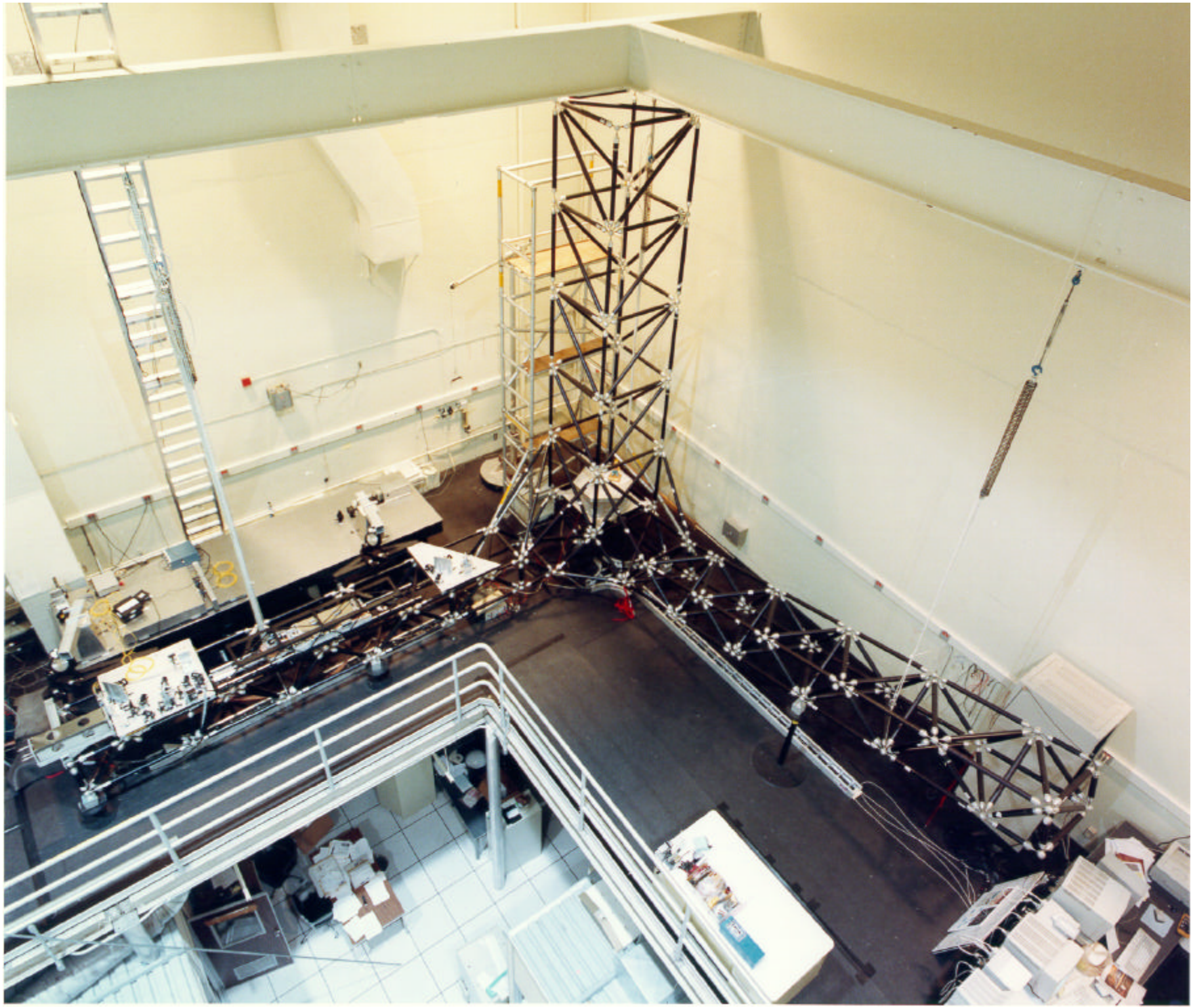
IV. Validation Procedure

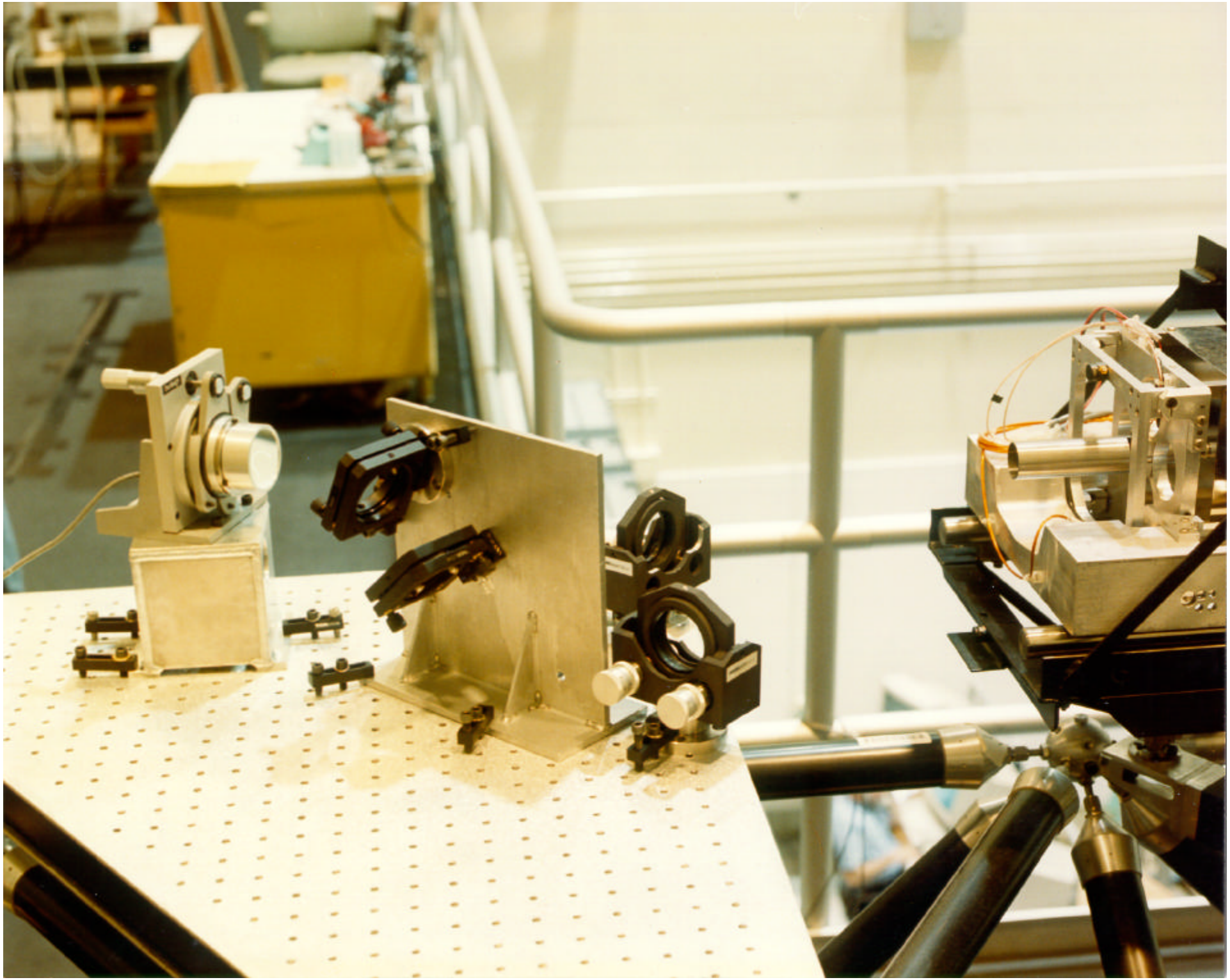
- A. Transfer Function Measurement
- B. Validation Metric

V. Results

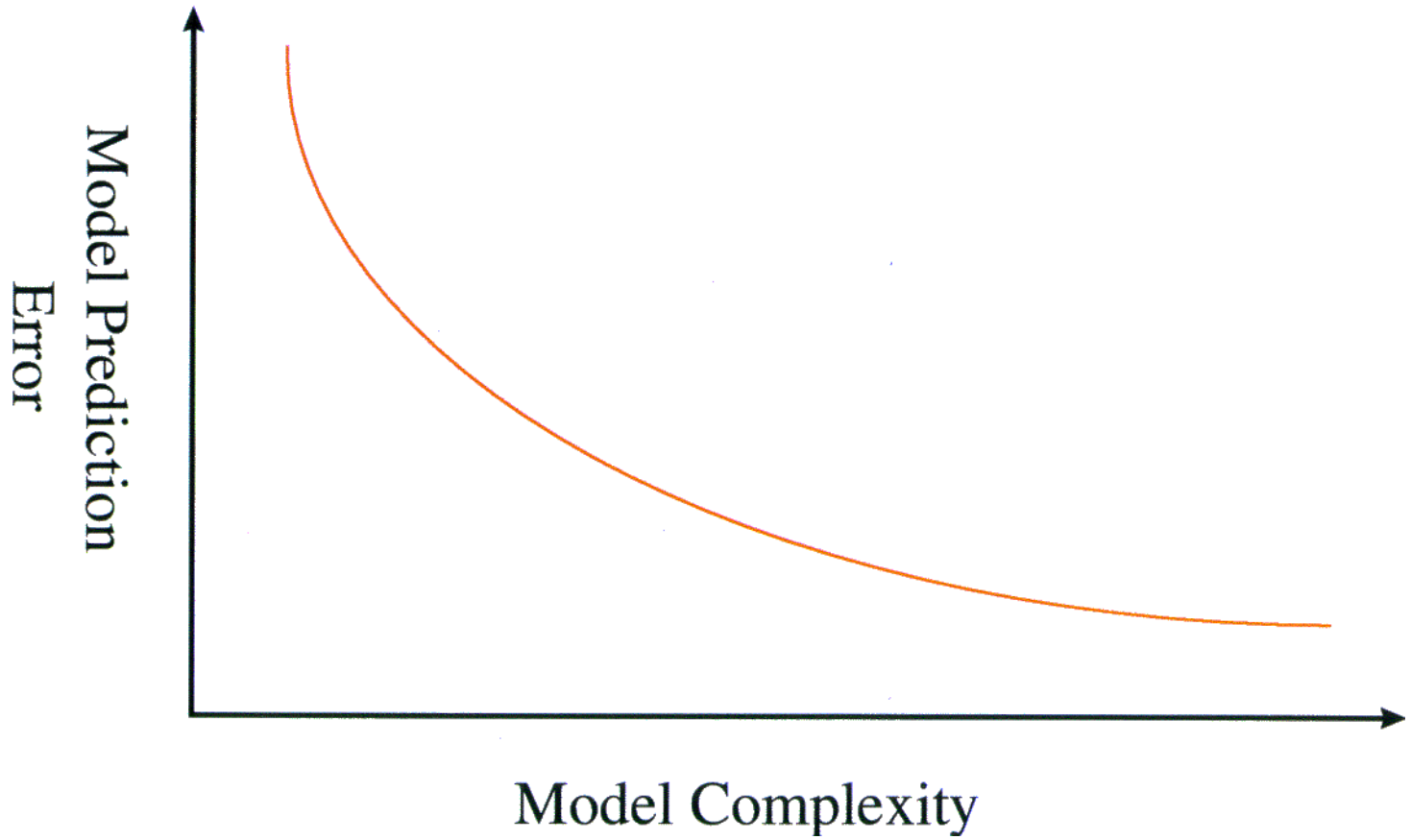
VI. Present and Future Work

JPL
INTEGRATED MODELING OF
ADVANCED OPTICAL SYSTEMS



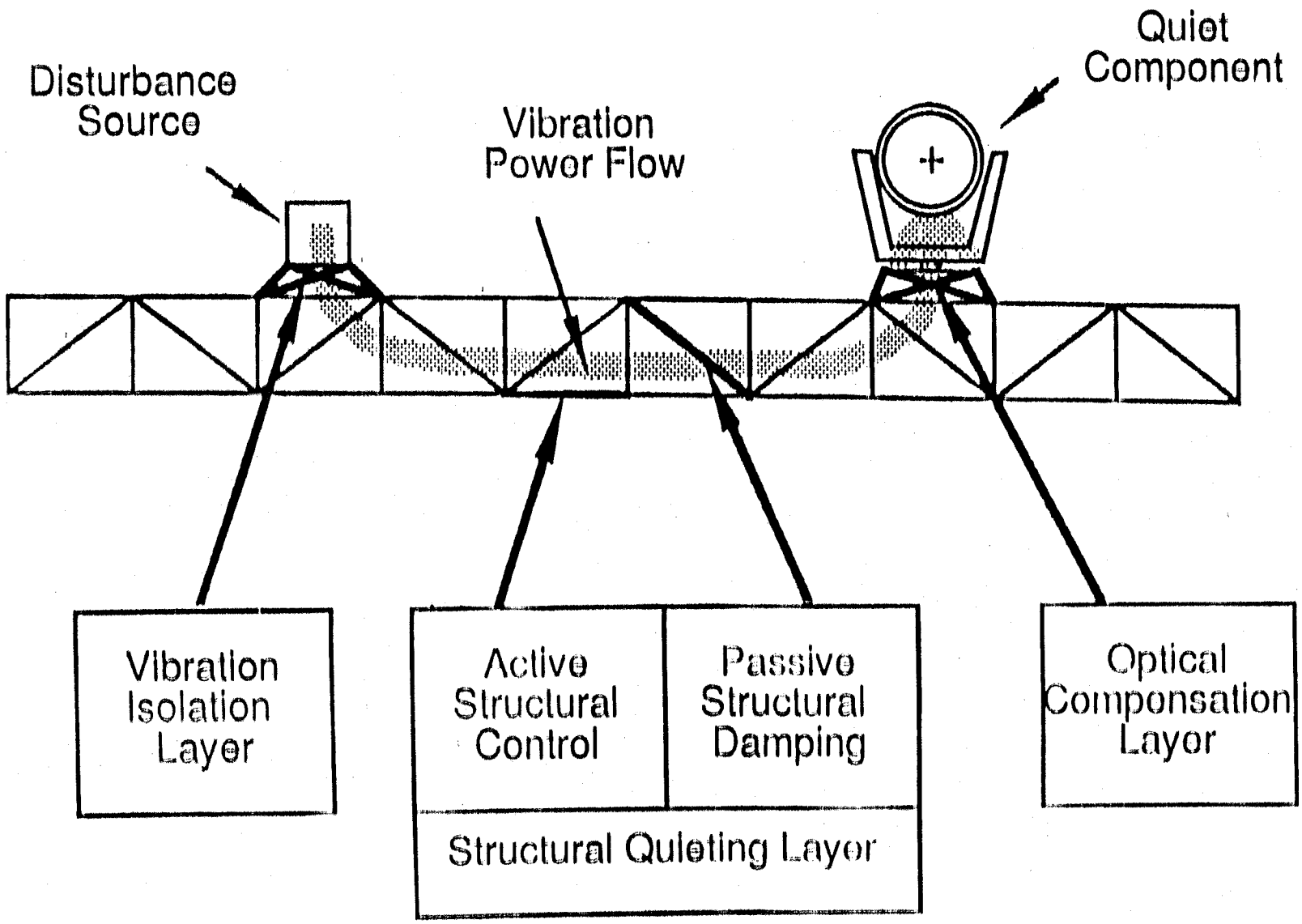


Objectives of Work



MPI IMOS Model Definitions - Rev. 4

IMOS Model Version ↓ / Model Space →	Structure										Optics				Control System			Disturband Source	
	Truss				Components														
	no updates, beam, stick	no updates, rod, truss	no updates, beam, truss	updated, beam, truss	rbe's, lumped m, no updates	distributed m and k component mounts no updates	distributed m and k, no updates	distributed m and k, corrected model form error	distributed m and k, delay line parameter update	distributed m and k, siderostat parameter update	no power, 5 flats, rbe mounts	power, 10 surfaces, rbe mounts	power, 27 surfaces, rbe mounts	power, 27 surfaces, beam mounts	filter disturbance transfer functions	ideal sensor/actuator, close loops	model sensor/actuator, close loops	broadband reaction wheel disturbance model	narrowband reaction wheel disturbance model
Low Fidelity MPI Stick	X				X						X								
#1 Mid Fidelity MPI	X					X						X							
#2 Mid Fidelity MPI	X					X						X							
Full-up MPI, no updates			X				X						X						
Full-up MPI				X				X	X				X			X		X	X
Full-up MPI+				X				X	X	X				X			X	X	X

= model exists

MICRO-PRECISION CSI MULTI-LAYER ARCHITECTURE