

Estimation and Control Problems in Adaptive Optics

Thursday January 22, 2004

- 8:00–8:30 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:30–9:00 *Welcome and Opening Remarks*
- 8:45 *ba|Background and Fundamentals*
- 9:00–9:45 **Li Chen** (University of Rochester)
Adaptive Optics for Vision
- 9:45–10:30 **Marcos van Dam** (Lawrence Livermore National Laboratory)
Fundamentals of adaptive optics and wavefront reconstruction
- 10:30–11:00 *Break*
- 11:00–11:45 **Jean-Marc Conan** (Onera)
Fundamentals of estimation theory applied to wavefront reconstruction and adaptive optics control
- 11:45–12:30 **Curt Vogel** (Montana State University, Bozeman)
Fundamentals of computational linear algebra for inverse problems
- 12:30–2:30 *Lunch (on your own)*
- 2:00 *ws|Wavefront Sensing*
- 2:30–3:15 **Andrea M. Ghez** (UCLA)
Adaptive Optics Observations of the Galactic Center
- 3:15–4:00 **Lisa Poyneer** (Lawrence Livermore National Laboratory)
Correlation methods for wave-front sensing
- 4:00–4:30 *Break*
- 4:30–4:45 **Aron Ahmadi** (Illinois Institute of Technology)
Parallel Implementation of an Adaptive Optics Simulation Code
- 4:45–5:00 **Donald Gavel** (University of California at Santa Cruz)
Wavefront Sensing
- 5:00–5:30 **Brent Ellerbroek** (National Optical Astronomical Observatory)
Spatial Frequency Domain Methods
- 5:30–7:00 *Wine/Cheese Reception (Hosted by IPAM)*



Friday January 23, 2004

- 8:00–9:00 *Continental Breakfast*
- 8:30 *eam|ExAO and MCAO*
- 9:00–9:45 **Bruce Macintosh** (Lawrence Livermore National Laboratory)
Fundamentals of ExAO
- 9:45–10:30 **Lisa Poyneer** (Lawrence Livermore National Laboratory)
Wavefront Control for Extreme Adaptive optics
- 10:30–11:00 *Break*
- 11:00–11:45 **Brent Ellerbroek** (National Optical Astronomical Observatory)
Computationally Efficient Methods for MCAO Wavefront Reconstruction
- 11:45–12:00 **Piotr Piatrou** (Michigan Technological University)
Phase to WFS influence matrix elements cross verification
- 12:00–12:15 **Amir Give'on** (Princeton University)
Why phase conjugation does not work
- 12:30–2:30 *Lunch (on your own)*
- 2:00 *clwc|Closed-Loop Wavefront Control*
- 2:30–3:15 **Miska Le Louarn** (ESO)
Fundamentals of closed-loop wavefront control
- 3:15–4:00 **Donald Gavel** (University of California at Santa Cruz)
Kalman filtering techniques
- 4:00–4:30 *Break*
- 4:30–5:15 **James S. Gibson** (UCLA)
Other predictive/adaptive control methods
- 5:15–6:00 **Luc Gilles** (Michigan Technological University)
Closed-Loop Iterative Sparse Layer-oriented MCAO Control Algorithms

Saturday January 24, 2004

- 8:00–9:00 *Continental Breakfast*
- 8:45 *acj|Advanced Concepts and Issues*
- 9:00–9:45 **Hongwu Ren** (California Institute of Technology)
Fan beam and tomographic techniques
- 9:45–10:30 **Glenn Tyler** (TOSC)
Adaptive Optics Transmission through Strong Turbulence
- 10:30–11:00 *Break*
- 11:00–11:45 **Donald Wiberg** (University of California at Santa Cruz)
A Spatial Non-dynamic LQG Controller
- 11:45–12:00 *Conclusion*

