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Adaptive Optics and Wavefront Control for Biological Systems III

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Contents

In an adaptive optics system, wavefront distortions are measured by a wavefront sensor, and then using an active optical element such as a deformable mirror the instantaneous wavefront distortions are corrected. On the other hand, three physical effects are observed when a light beam propagates through a turbulent atmosphere: optical scintillation, beam wandering, and uctuations in the angle-of-arrival (AA).Â In wavefront sensing applications the AA uctuations measurement is a basic step. Various wavefront sensing techniques have been developed for use in a variety of applications ranging from measuring the wave aberrations of human eyes (Lombardo & Lombardo, 2009) to adaptive optics in astronomy (Roddier, 1999). Adaptive Optical Elements and Systems. Adaptive optics corrects a wavefront by using an optical element that changes shape when an outside control signal is applied. A deformable mirror is an adaptive element with a controllable reflective surface shape. By introducing the correct mirror shape, a distorted input wavefront can be improved as illustrated in Figure 2. Figure 2: Deformable Mirror Correcting a Distorted Wavefront. The mirror shape can be derived from a set of pre-calculated or stored shapes, i.e., open loop control, or can be calculated based on feedback from a wavefront sensor and Please type a message to the paper's authors to explain your need for the paper. Paper: Special Section Guest Editorial: Adaptive Optics and Wavefront Control for Biological Systems. To: Thomas G Bifano, Joel A Kubby, Sylvain Gigan. From (Name): E-mail: Only shared with authors of paper. Please enter a personalized message to the authors. More detailed explanations for your need are more likely to get a response. Send Request. Load Form Load Form.