

# **AOIM2013**

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**STIAS Conference Centre**

## **Book of abstracts**

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## **Imaging the expression of Channelrhodopsin-2 as a directly light-gated cation-selective membrane channel in HEK 293 cells**

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### **Session IX: Space / 3**

## **-Strehl ratio, divergence, M2 factor –What is good for describing the propagation of a diffracted laser beam?**

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### **Session VI: Vision / 4**

## **Dynamic plenoptic perception with adaptive mirror**

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## **Imaging of solid aerosols produced by optical catapulting**

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### **Session VI: Vision / 6**

## **The use of Zernike and Q-Polynomials combined for the Representation of Intraocular-Lens Topologies**

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**Session III: Wavefront Sensing Techniques / 9**

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**Session II : Imaging and Microscopy / 10**

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**Session IX: Space / 12**

**Overview and perspectives of Active and Adaptive Optics for Space Optical Applications**

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**Session VII : Imaging and Microscopy / 15**

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### Session III: Wavefront Sensing Techniques / 17

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### Session IV: Adaptive Control / 19

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## Computational Testbench and Flow Chart for Wavefront Sensors

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**Session II : Imaging and Microscopy / 22**

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**Seesion I : AO in Lasers / 24**

**Recent advances in high-power fundamental mode thin-disk lasers using intra-cavity deformable mirrors**

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**Session IV: Adaptive Control / 25**

**Characterization and application of a deformable mirror for pulse shaping in the Mid-Infrared**

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## Session II : Imaging and Microscopy / 26

### Modal deformable mirror optimization in sensorless Optical Coherence Tomography

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## Session IV: Adaptive Control / 27

### Ultrafast time compensated monochromator with deformable diffraction gratings

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## Session IV: Adaptive Control / 28

### High resolution wavefront control using a photocontrolled deformable mirror in closed loop

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**Session VIII : Spatial Light Modulators / 29**

**All-digital holographic tool for real-time mode excitation and ~analysis in optical waveguides**

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**Utilizing speckle decorrelation for tomographic wavefront sensing (with one wavefront sensor)**

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**Session IX: Space / 31**

**Manufacturing and Testing of Unimorph Deformable Mirrors for Space Telescopes**

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**Optical Design and Optimization of Adaptive Automobile Headlight with Liquid Optical Element and Freeform**

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## **Compensation of the two-stage phase-shifting algorithms with respect to detuning and harmonics**

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**Session VII : Imaging and Microscopy / 35**

## **Correction for distortions in holographic nanointerferometers**

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**Session V: AO Techniques / 36**

## **Adaptive Lenses for Displays & Vision**

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**Session V: AO Techniques / 37**

## **Results on the high power testing of screen-printed deformable mirrors**

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**Session VII : Imaging and Microscopy / 38**

## **Advances in adaptive optics nonlinear microscopy for applications in medical and life sciences**

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**Session X: Propagation and Turbulance / 39**

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**Session VI: Vision / 41**

**Dynamic generation of scattering for high resolution adaptive optics in the eye**

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**Session VIII : Spatial Light Modulators / 42**

**Phase generation in white light with a 6-Pi Liquid Crystal on Silicon (LCoS) device**

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**A parametric study of the contributing factors influencing femtosecond pulse shape transfer via difference frequency mixing.**

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**Session V: AO Techniques / 44**

**Design optimization of an actuator pattern for a unimorph deformable mirror**

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**Session V: AO Techniques / 45**

**Large Scale Deformable Mirror Based on Bimorph and Stack Actuators**

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**Wide field wavefront sensing on extended scenes and possible applications**

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**Localization and image reconstruction of inclusions embedded in biological tissue (turbid media) by means of adaptive optical system**

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**Session IV: Adaptive Control / 48**

**Real-time high speed adaptive optical system for imaging and laser beam control**

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**Artificial model of human eye aberrations proceeded in real-time**

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**Session V: AO Techniques / 50**

**Recent Advances in MEMS Deformable Mirror Technology**

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**Session II : Imaging and Microscopy / 51**

**Superpenetration Multiphoton Microscopy Enabled Through MEMS DM Technology**

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**Session VIII : Spatial Light Modulators / 52**

**A novel technique to generate and temporally shape multiple pulsed laser beams using 2D-SLMs**

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**Session II : Imaging and Microscopy / 59**

**ADAPTIVE OPTICS FROM MICROSCOPY TO NANOSCOPY**

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**Free space prop without Free Space**

**Session X: Propagation and Turbulance / 61**

**Free Space prop without the free space**

**Seesion I : AO in Lasers / 62**

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**Session VIII : Spatial Light Modulators / 63**

**Shaping ultrafast pulsed beams in space and time with programmable spatial light modulators**

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**Session I : AO in Lasers / 64**

**Achieving the highest intensity from the Orion Laser Facility**

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**Session X: Propagation and Turbulance / 65**

**Quantum Communications along Optical Links with Strong Turbulence**

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**Session VI: Vision / 66**

**Functional Imaging of Single Cells in the Living Eye**

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**Welcome Remarks**

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**Introductory lectures on the core technology / 68**

**Basics of AOs and adaptive control**

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**Introductory lectures on the core technology / 69**

**Basics of deformable mirrors**

**Introductory lectures on the core technology / 70**

**Basics of wavefront sensing**

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**Basics of liquid crystals and their use in AOs:**

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**Introductory lectures on applications in medicine and health / 72**

**AOs in Vision**

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**Introductory lectures on applications in medicine and health / 73**

**Biomedical imaging with AOs**

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**Introductory lectures on applications in medicine and health / 74**

**AOs and microscopy**

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**Introductory lectures on current state-of-the art AO systems / 75**

**Turn key AO systems**

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**Introductory lectures on current state-of-the art AO systems / 76**

**AOs in ultrafast and ultrahigh power lasers**

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**Introductory lectures on current state-of-the art AO systems / 77**

## **AOs in high precision materials**

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**Session IV: Adaptive Control / 78**

## **Wavefront correction in large-scale glass laser LFEX**

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**Session VIII : Spatial Light Modulators / 79**

## **Real-time dynamic control of laser modes**

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**Session X: Propagation and Turbulance / 80**

## **Quantum communication with OAM entangled photons**

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## **Producing Kaleidoscope Modes using the Digital Laser**

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