

## 9<sup>th</sup> International Workshop on Adaptive Optics for Industry & Medicine Invited Speakers

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**David R. Williams, Ph.D.**  
**Dean for Research of Arts, Science,  
& Engineering**  
**William G. Allyn Professor**  
**of Medical Optics**  
**Director, Center for Visual Science**  
**University of Rochester**

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Williams received his Ph.D. from the University of California, San Diego in 1979. He was a postdoctoral fellow at Bell Laboratories, Murray Hill in 1980 and joined the University of Rochester in 1981, where he has an appointment in the Institute of Optics as well as in the departments of Brain and Cognitive Sciences, Biomedical Engineering, and Ophthalmology. He is currently William G. Allyn Professor of Medical Optics. Since 1991, Williams has served as Director of Rochester's Center for Visual Science, an interdisciplinary research program of 32 faculty interested in the mechanisms of human vision. In 2011, he was appointed Dean for Research of Arts, Science and Engineering where he is responsible for maximizing opportunities for faculty research and scholarship. Williams' research marshals optical technology to address questions about the fundamental limits of human vision. His research team demonstrated the first adaptive optics system for the eye, showing that vision can be improved beyond that provided by conventional spectacles. This work led to wavefront-guided refractive surgery used throughout the world today. More recently, his group has been deploying adaptive optics to obtain microscopic images with unprecedented resolution in the living eye, which is providing a new way to study blinding diseases of the retina and accelerate the development of therapies for them. Williams is a Fellow of the Optical Society of America, the American Association for the Advancement of Science, and the Association for Research in Vision and Ophthalmology. Awards he has received include the OSA Edgar G. Tillyer Award in 1998, the Association for Research in Vision and Ophthalmology's Friedenwald Award in 2006, the Bressler Prize from the Jewish Guild for the Blind in 2007, and the Champalimaud Vision Award in 2012.

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**Dr Nick Hopps**  
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**AWE, Aldermaston, Reading, RG7 4PR**

Dr Nick Hopps obtained his BSc in Physics in 1992 and PhD in Laser Physics in 1996, both from the University of Manchester in the UK. He has worked on the high power laser programme at the UK's Atomic Weapons Establishment (AWE) since 1995. He has undertaken two upgrades to the HELEN 1kJ laser, culminating in a 100J, 100TW short pulse beam. During a secondment to Lawrence Livermore National Laboratory in California, Nick helped to develop the pre-amplifier subsystems for the National Ignition Facility (NIF). Since 2004, he has been involved in the project to build the 6kJ, petawatt Orion Laser Facility at AWE, initially overseeing the design and procurement of certain laser subsystems, and later leading the commissioning the main laser beamlines. Nick now leads the laser development activities at AWE's Plasma Physics Centre.



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**Dr Martin Booth**

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Martin Booth is a Senior Research Fellow based jointly in the Department of Engineering Science and the Centre for Neural Circuits and Behaviour, at the University of Oxford, UK. His research interests cover methods and applications of dynamic optics to a range of interdisciplinary applications. In particular, his work involves the development of adaptive optics for biomedical microscopy and laser-based nano-fabrication of photonic devices.

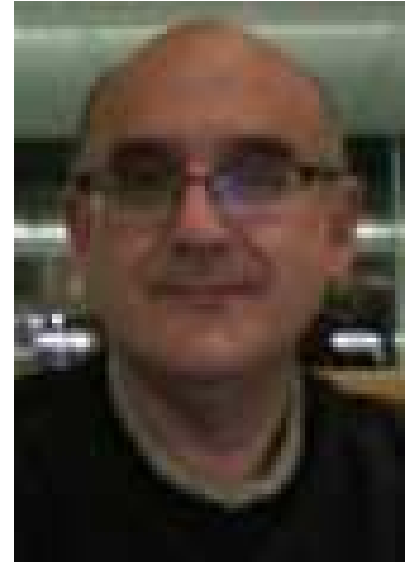


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### **Dr. JesúsLancis**

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Dr. JesúsLancis is a full professor of Photonics at UniversitatJaume I in Castelló Spain since 2009 where now he leads the Photonics research group. His research activity has been devoted to diffractive engineering of light fields and the main research lines can be grouped in two main research areas:

- Advanced techniques in optical imaging
- Science and applications of ultrashort light pulses.

Overall, Dr. JesúsLancis is active in fine control over and comprehensive characterization of optical beams, both continuous wave and pulsed in the femtosecond range by use of diffractive optical elements. Further, Dr. JesúsLancis has extensively characterized and employed programmable spatial light modulators, both liquid crystal based or digital micromirror devices, to codify diffractive optical components, which, in this way, were readily integrated in dynamical devices. Dr. Lancis has a large experience in the design and development of all- optical devices to manipulate femtosecond pulses in a controlled fashion by means of diffractive optical elements as well as their application to optical imaging and material processing. In the field of imaging science, current research interest is devoted to digital holography, optical imaging through turbid media, multiphoton microscopy and applications of compressive sensing technique to optical imaging.

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Rocío Borrego-Varillas received a BSc in Physics (2006) and a MSc in Physics and Technology of Lasers (2007) from Salamanca University in Spain. She joined Prof. Luis Roso's group on Extreme Optics (GIOE) as a predoctoral fellow in 2008 and obtained the PhD degree in 2013. Her doctoral research was focused on the improvement of nonlinear processes (filamentation, second harmonic and supercontinuum generation) by means of wavefront control. She also worked on the development of novel methods for wavefront sensing of intense femtosecond lasers. During her PhD, she did internships at Prof. Krausz's division in the Max Planck Institute of Quantum Optics (Germany), where she collaborated on the development of the Petawatt Field Synthesizer. She is currently a postdoctoral researcher at the Photonics Group of Prof. Lancis at the Universitat Jaume I in Castellón (Spain), where she works on beam shaping of femtosecond pulses by means of spatial light modulators for applications in nonlinear optics. She has been recently awarded a Marie Curie Fellowship, which will allow her to conduct experiments on spectroscopy of biomolecules in Prof. Cerullo's group at the Politecnico di Milano (Italy).

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**Prof. Paolo Villorosi**  
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Born in Treviso, Italy, in 1962, he studied Physics and Applied Mathematics at the University of Padova.

He is a Professor (II f., 02/B1) at the University of Padova since 2005, where he currently teaches Quantum Electronics and Quantum Optics.

### **Current research activities:**

- Experimental Quantum Communication - Q-Space Experiment 2003-2006: First Demonstration of single-photon link between a satellite and the Earth - Principal Investigator of ASI SpaceQ project (2007-2008), to study a dedicate satellite for quantum communication in Space. Principal Investigator of University of Padova QuantumFuture project (2009-2012), on the frontier of free-space communications. He is presently coordinator of two projects on the development of Quantum Communications in free-space.
- Applications of femtosecond lasers to material processing and
- Development of novel applications of Adaptive Optics.

He has served as coordinator of several national and international research projects, including space quantum communication.

He is member of the Board of the Institute for Photonics and Nanotechnology, National Research Council, Italy.