

Spatial transformations: from fundamentals to applications

9:00 am on Monday 26 January 2015 — 5:00 pm on Tuesday 27 January 2015

at [The Royal Society at Chicheley Hall, home of the Kavli Royal Society International Centre, Buckinghamshire](#)

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Theo Murphy international scientific meeting organised by Professor Yang Hao, Professor Roy Sambles FRS, Professor Patrick Grant, Professor Alastair Hibbins, Dr Thomas Philbin and Dr Robert Foster

Event details

This meeting centres on the theory and application of spatial transformations to design devices for controlling waves. This area has garnered significant public interest due to the promise of optical invisibility, but the potential applications are wider. The meeting brings together theorists, material scientists and electromagnetic engineers to consider basic theory, fabrication issues and the potential for radically new devices.

The [draft programme](#) is available to download and abstracts of the speakers are available below. Recorded audio of the presentations will be available on this page after the event.

Attending this event

This is a residential conference, which allows for increased discussion and networking. It is free to attend, however participants need to cover their accommodation and catering costs if required.

Enquiries: [Contact the events team](#)

Organisers

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Professor Roy Sambles FRS, University of Exeter, UK

Dr Alastair Hibbins, University of Exeter, UK

Dr Thomas Philbin, University of Exeter, UK

Dr Robert Foster, Queen Mary University of London, UK

Professor Patrick Grant FEng, University of Oxford, UK

Session 1

Sir John Pendry FRS, Imperial College London, UK

Transformation optics: a universal design tool

Professor Ulf Leonhardt, Weizmann Institute of Science, Israel

Cosmology in the laboratory

Professor Nader Engheta, University of Pennsylvania, USA

Optics of Metastuctures

Session 2

Professor Raymond C. Rumpf, University of Texas, USA

Spatially variant periodic structures in electromagnetics

Professor Martin Wegener, Karlsruhe Institute of Technology, Germany

Experiments on cloaking in optics, thermodynamics, and mechanics

Professor Patrick Grant FEng, University of Oxford, UK

Manufacture of electrical and magnetic graded and anisotropic materials for novel

Session 3

Professor Sergei Tretyakov, Aalto University, Finland

Metasurfaces for general transformations of electromagnetic fields

Professor Stefano Maci, University of Sienna, Italy

Metasurface Transformation Electromagnetics

Professor Raj Mittra, Pennsylvania State University, USA

A new look at transformation electromagnetics approach for designing electromagnetic devices such as flat lenses, reflectarrays and blankets for radar cross section reduction of real-world objects

Professor Douglas Werner, Pennsylvania State University, USA

Spatial transformation enabled electromagnetic devices: From radio frequencies to optical wavelengths

Session 4

Professor Andrea Alù, University of Texas, USA

Metasurfaces with spatial and temporal modulation to manipulate and control waves

Professor Philippe Tassin, Chalmers University, Sweden

Transformation optics beyond the manipulation of light trajectories

Professor Oliver Wright, Hokkaido University, Japan

Watching surface waves in phononic crystals

Professor Ian Youngs, Defence Science and Technology Laboratories, UK

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