

Vision for Optics and Photonics Teaching

Wednesday 3rd Dec. 2008

Ogden Centre, Durham University, Physics Dept.

Registration fee £30.

Programme

- 10.30 Coffee & Registration
- 11.00 Welcome, Gordon Love, Lowry McComb and Ifan Hughes
Chair of morning session:- Gordon Love
- 11.05 Miles Pagdett, University of Glasgow
"Optics - Shedding light on Physics"
<http://www.physics.gla.ac.uk/Optics/>
- 11.30 Richard Thompson, Imperial College
"A new approach to the teaching of optics using directed reading and interactive lectures"
<http://www3.imperial.ac.uk/people/r.thompson>
- 11.55 Chris Dainty, National University of Ireland, Galway
"Schools Outreach in Optics "
http://www.ucg.ie/research/applied_optics/people/chris/chris.html
- 12.20 Eric Yao, University of Glasgow
"Learning Optics through an investigative group project"
<http://www.physics.gla.ac.uk/Optics/people/>
- 12.45 Discussion
- 13.00 Lunch and AGM of the Higher Education Group
Chair of afternoon session:- Lowry McComb
- 14.15 Bruce Sinclair, University of St Andrews
"Reflections on what MSc students gain from an advanced photonics teaching laboratory"
http://www.st-andrews.ac.uk/physics/PHP_Global/Staff_Info.php?id=79
- 14.40 David Binks, Manchester University
"The MSc in Photon Science - design and implementation of an interdisciplinary Masters programme".
<http://www.physics.manchester.ac.uk/research/groups/photon/db/>
- 15.05 Charles Adams, Durham University
"Optics with atoms – complementarity in action"
<http://massey.dur.ac.uk/csa/index.html>
- 15.30 Discussion
- 15.40 Tea and informal discussions
- 16.10 End of Meeting

This one-day meeting will focus on the teaching of optics at undergraduate and masters level. We will take a broad-brush approach and aim to cover the full range of optics teaching from the thin lens formula through to optics for cold atoms, and consider both theory and experiment. Presentations will be given by a range of speakers who are both at the cutting edge of optics research and who also are inspiring teachers. Innovative ways of teaching optics and photonics will be explored.

Miles Padgett FRSE heads the optics group at the Department of Physics and Astronomy, the University of Glasgow. In his talk he aims to show examples of optics research which illustrate fundamental principles in physics. A recurrent theme will be: Physics is "learn a little to understand a lot". Within optics, diffraction is a demonstration of the uncertainty principle, the Talbot effect is analogous to a quantum revival, and the design of a computer generated hologram is the solution to an inverse problem. Optics contains examples of, and analogies to, most other branches of Physics - perhaps optics can be said to illuminate the rest of Physics?

The Director of Undergraduate Studies in the Physics Department, Imperial College London, is Richard Thompson; he will present a new approach to the teaching of optics using directed reading and interactive lectures.

Chris Dainty is head of the Applied Optics group at the National University of Ireland, Galway, and has been active in the field of optics research for 40 years. His current research covers topics in adaptive optics, vision science, scattering, atmospheric propagation, polarisation and partially coherent imaging. His talk will be on the topic of Schools Outreach in Optics.

The Department of Physics and Astronomy, the University of Glasgow provides another speaker: Eric Yao, who is a University Teacher. His presentation will cover the topic of learning optics through an investigative group project.

The themes of the afternoon session are Masters level teaching and optics with atoms.

The Director of Teaching School of Physics & Astronomy, University of St Andrews is Bruce Sinclair who has research interests in solid-state lasers, and is a prize-winning teacher. In his presentation he will reflect on what MSc students gain from an advanced photonics teaching laboratory.

In addition to investigating the light sensitivity of photorefractive polymers David Binks teaches on the MSC in Photon Science at Manchester University. His talk will discuss the design and implementation of an interdisciplinary masters programme.

The final speaker is from the host institute. Charles Adams has been active in the fields of optics with photons and atoms for over 20 years and is the author of the definitive reviews of Atom Optics. In his talk he will discuss how his teaching uses the ideas of optics with atoms to illuminate complementarity.

Registration

Please pre-register by e-mailing t.j.l.mccomb@durham.ac.uk and state any dietary requirements. We will collect the registration fee (£30 by cheque or cash (cheques made payable to the IOP)) on the day. The fee will be waived for postgraduate research students who attend.