

In the Twinkling of an Eye: The life of a Photon

Prof. David Andrews

University of East Anglia, U.K.

Abstract

Interactions with matter are the only way we can learn about light, but we seldom think about the brief existence of the photons in our common visual world. It proves interesting to consider the properties of the photon during its full lifetime, relative to a stationary observer, and to reflect on how those properties engage with matter. This approach then invites us to reflect on the fundamental ‘reality’ of the photon, affording useful insights into some surprising links between optical processes once thought to be distinct – such as near-field interactions, intermolecular energy transfer, Casimir-Polder forces and ‘optical binding’, where light alone produces stable, non-contact arrangements of nanoparticles. Ultimately this leads us to explore a few questions that have only recently begun to be tackled, especially surrounding the nature, properties, and applications of optical vortices.

11:30 a.m. - Monday September 19, 2022

CNST@Polimi Monday Talk (in presence and online) - [Join the Meeting](#)



About the speaker

David Andrews is a Professor at the University of East Anglia in Norwich, U.K. His research spans wide-ranging areas of quantum and nonlinear optics, nanophotonics, quantum electrodynamics, chirality and singular optics. He has published more than 400 papers and more than 20 books, including *The Angular Momentum of Light*, *Resonance Energy Transfer*, *Optical Nanomanipulation*, and an *Introduction to Photon Science and Technology*. David is a keen traveller and has given invited lectures in more than twenty different nations, also initiating conferences including *Complex Light and Optical Forces*, held annually in San Francisco, and the biennial *Nanophotonics* conference in Strasbourg. He is a Fellow of the Institute of Physics, the Royal Society of Chemistry, Optica, and SPIE – the international society for optics and photonics, of which he was the 2021 President.

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