

Probing biological systems with quantum structured light

Andrew FORBES^{*,1}

¹*School of Physics, University of the Witwatersrand, Johannesburg, South Africa*

[*Andrew.forbes@wits.ac.za](mailto:Andrew.forbes@wits.ac.za)

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Structured light refers to the ability to tailor light in all its degrees of freedom (DoF) and can be executed both as classical and quantum states [1,2]. In quantum imaging, structure has enabled simultaneous probing of many features of a system at once, and enhanced image quality when unwanted structure is removed. In this work I highlight the recent developments in using quantum structured light to probe and image biological systems. I will show how quantum holography can extract phase and amplitude structure with high contrast and how hybrid entanglement enables seeing hidden structure that would otherwise be invisible. I will showcase how the nascent ability to imbue light with a topology [3,4] enables seeing through randomness as well as probing for perturbation, demonstrated on biological species.

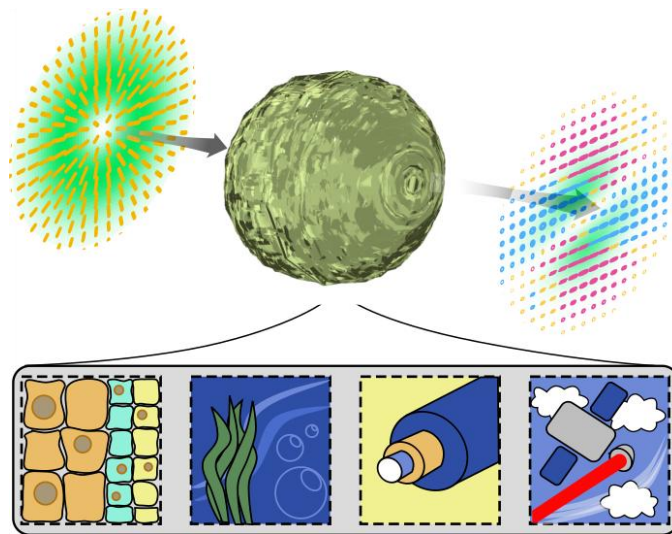


Fig. 1: Seeing through randomness with structured light. The talk will focus exclusively on turbid biological systems.

References:

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