



## Spatial and spatiotemporal engineering of light: from marching band to orchestra



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### **Abstract**

The rapid advancement of light field engineering technology has enabled arbitrary control of light field parameters (amplitude, phase, polarization, ellipticity, etc.) in both spatial and temporal domains (pulse width and waveform). This report, drawing on my personal research experience, provides a brief overview of the development and applications of light field engineering, taking two widely studied types of structured light fields (scalar optical vortex fields and vector optical vortex fields) as examples. Then I will introduce some of the latest progress in spatiotemporal sculpturing of light fields and present a perspective on the future development and application prospects of this research field.

### **Biography**

Dr. Qiwen Zhan is Distinguished Chair Professor in Nanophotonics at the University of Shanghai for Science and Technology (USST) and founder of the Center for Complex Optical Fields and Meta-Optics Structures (COSMOS). He also holds joint appointment with Zhangjiang Laboratory, China, as well as affiliate membership with the International Institute for Sustainability with Knotted Chiral Meta Matter (WPI-SKCM2) at the Hiroshima University, Japan. He received a B.S. in Physics (optoelectronic) from the University of Science and Technology of China (USTC) in 1996 and a Ph.D. in Electrical Engineering from the University of Minnesota in 2002. From 2002 to 2020, he held a tenured faculty position (Assistant Professor in 2002, Associate Professor in 2008, and Full Professor in 2012) in the Department of Electro-Optics and Photonics at the University of Dayton, USA. He has published 1 book, 9 book chapters, and more than 300 journal and conference publications, delivered many conference presentations and invited talks/lectures/seminars, and possessed more than 20 patents (US and China). He is an Associate Editor for Science Bulletin, Associate Editor-in-Chief for PhotonIX, Editorial Board Member for Scientific Reports and Chinese Optics Letters, Senior Member of the IEEE, elected Fellow of Optica (formerly OSA), and Fellow of the SPIE.

\*\*\* ALL ARE WELCOME \*\*\*

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