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Topological Photonics and Topological Insulator Lasers

The past few years have witnessed the emergence of the new field of Topological Photonics. The first pioneering papers were intended to transfer the concepts of topological insulators from the electronic condensed matter systems to the electromagnetic and photonics settings. This meant transforming fermionic concepts into the bosonic nature of photons. But in the years that followed, many new ideas have emerged, some are universal - making immediate impact of fields beyond photonics, and some are unique to photonic systems. The natural progress in this field is now exemplified by the recent discovery of topological insulator lasers, an idea that started as a quantum simulator and developed all the way to a promising application.

Biography

Moti Segev is the Robert J. Shillman Distinguished Professor of Physics, at the Technion, Israel. He received his BSc and PhD from the Technion in 1985 and 1990. After postdoc at Caltech, he joined Princeton as Assistant Professor (1994), becoming Associate Professor in 1997, and Professor in 1999. Subsequently, Moti went back to Israel, and in 2009 was appointed as Distinguished Professor.

Moti's interests are mainly in nonlinear optics, solitons, sub-wavelength imaging, lasers and quantum electronics, although he finds entertainment in more demanding fields such as basketball and hiking. He is a Fellow of OSA and APS. He has won numerous awards, among them the 2007 Quantum Electronics Prize of the EPS, the 2008 Landau Prize (Israel), the 2009 Max Born Award of the OSA, and the 2014 Arthur Schawlow Prize of the APS. In 2011, he was elected to the Israel Academy of Sciences and Humanities, and in 2014 he won the Israel Prize in Physics (highest honor in Israel). In 2015, Moti was elected to the National Academy of Science (USA) as a foreign associate.

However, above all his personal achievements, he takes pride in the success of his graduate students and postdocs, among them are currently 19 professors in the USA, Germany, Taiwan, Croatia, Italy, India and Israel, and many holding senior R&D positions in the industry.