

ICTS DISTINGUISHED LECTURE

Topological Quantum Matter, Entanglement, and a "Second Quantum Revolution"

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While the laws of quantum mechanics have remained unchanged and have passed all tests for the last eighty-five years, new discoveries about the exotic states that they allow, "entanglement", and ideas from quantum information theory, have greatly changed our perspective, and some believe that a "second quantum revolution" is currently underway. The discovery of unexpected "topological states of matter", and their possible use for "topologically-protected quantum information processing" is one of the important themes of these developments, and will be described.

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Frederick Duncan Michael Haldane earned his BA in 1973 and Ph.D. in 1978 at the University of Cambridge, UK and is presently the Sherman Fairchild University Professor of Physics at Princeton University, USA. Haldane is a fellow of the Royal Society, the American Academy of Arts and Sciences, American Physical Society, the Institute of Physics and the American Association for the Advancement of Science. Haldane has received many prestigious awards including the Oliver E. Buckley Prize of the American Physical Society (1993), Dirac Medal (2012) and shared the 2016 Nobel Prize in Physics "for theoretical discoveries of topological phase transitions and topological phases of matter" with David J. Thouless and J. Michael Kosterlitz

