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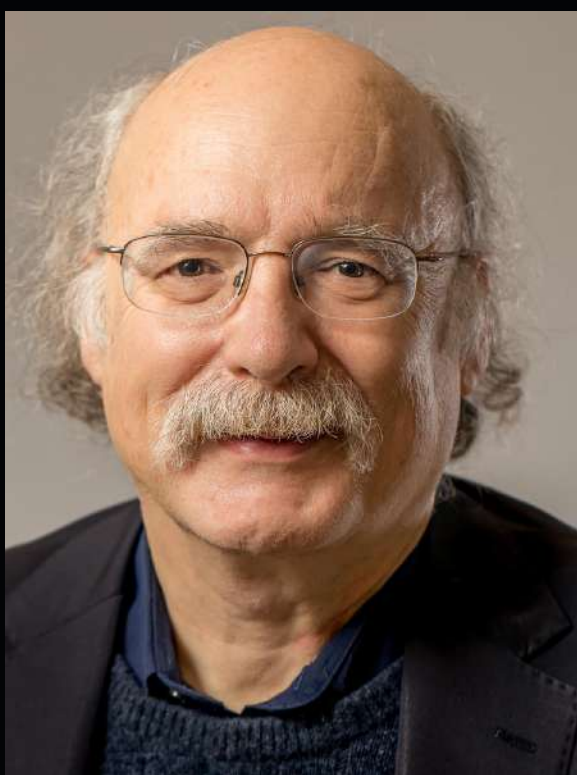
TATA INSTITUTE OF FUNDAMENTAL RESEARCH

ICTS COLLOQUIUM

Unexpected surprises:

History of the emergence of "topological quantum states of matter"

The 2016 Nobel Prize was awarded in part for discovery of "topological quantum states of matter". The most interesting discoveries are surprises that were completely unexpected by everyone (including the discoverers), otherwise, someone would have already discovered them! Topological states of matter, including the quantum Hall effect, "Haldane gap" spin chains, and topological insulators, are in this category. I will describe the history behind some of these discoveries, and why they were surprises when made.



Duncan Haldane

Sherman Fairchild University Professor of Physics,
Princeton University, USA

Duncan Haldane is the Eugene Higgins Professor of Physics at Princeton University. He is the recipient of the 2016 Nobel Prize in Physics for "theoretical discoveries of topological phase transitions and topological phases of matter." He received his Ph.D. in physics from the University of Cambridge in the United Kingdom in 1978 and joined the Princeton faculty in 1990. Prior to his position at Princeton, he held numerous post and professorships, including at the Institut Laue-Langevin in Grenoble, France, the University of Southern California, and the University of California, San Diego. His main research interests include strongly-interacting quantum many-body condensed-matter systems, especially those explored by non-perturbative methods, such as the geometry of the fractional quantum Hall effect (FQHE), "entanglement spectrum" of quantum states, model wavefunctions for the FQHE, and Topological Insulators, and "Chern Insulators." He is an elected Fellow of several organizations, including the American Physical Society, the American Academy of Arts and Sciences, the Royal Society of London, the Institute of Physics in the UK, and the American Association for the Advancement of Science, among others. In addition to his Nobel Prize, he has also won the Dirac Medal and Prize of the Abdus Salam International Center for Theoretical Physics and the Oliver E. Buckley Condensed Matter Physics Prize from the American Physical Society.

4:00 PM, 28 July 2025

Ramanujan Lecture Hall
ICTS, Bengaluru

Zoom link: <https://shorturl.at/Q7xYN>

Meeting ID: 910 5226 8833

Passcode: 282829

Register here:

