

LECTURE ON NOBEL PRIZE IN PHYSICS 2016

GLIMPSES OF TOPOLOGY IN MATERIALS



October 21, 2016, 3:00 pm at Raman Seminar Hall
Department of Physics, Pondicherry University



By

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Abstract of the lecture

Mathematics plays a fundamental role in the advancement of physics. The reverse is also true. This year's Nobel prize in physics exemplifies how some deep and simple ideas from topology has influenced developments in physics-theory of phase changes, critical phenomena, theory novel quantum phases in materials, new techniques in field theory, conformal field theory, topological field theory etc.. It has also catalysed advances in the field of mathematics. I will briefly review the works of the **Nobelists Thouless, Kosterlitz and Haldane**, in a pedagogic fashion and point out that their works done in the 70's and 80's continue to reverberate in modern theoretical physics, particularly in the quantum domain.

Biography

Prof. G. Baskaran is a theoretical physicist, known for his work on condensed matter physics and strongly correlated materials. Prof. G. Baskaran is an Emeritus Professor of physics at the Institute of Mathematical Sciences in Chennai.

In 1987–88, Prof. G. Baskaran, along with Prof. P.W. Anderson at Princeton University, developed the resonating valence band theory to describe the behavior of high-temperature superconductors. Prof. G. Baskaran is also known for his discovery of emerging gauge fields in strongly correlated systems, and for his predictions of p-wave superconductivity in strontium ruthenate and of high-temperature superconductivity in graphene; predictions which were later experimentally verified. In 1983, Prof. G. Baskaran was the first recipient of the ICTP Prize awarded by the ICTP, Trieste to young scientists in developing countries for the work in physics and mathematics. He was also awarded the Shanti Swarup Bhatnagar Prize by the Government of India in 1990.

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