



Wednesday, May 1, 2002

3:00 pm

APS Auditorium, Building 402, Argonne

National Laboratory

[APS Colloquium home](#)

J. Robert Schrieffer

Nobel Laureate

National High Magnetic Field Laboratory

Florida State University, Tallahassee

schrieff@magnet.fsu.edu

<http://www.physics.fsu.edu/research/NHMFL.htm>

Strange Quantum Numbers in Condensed Matter Physics

The origin of peculiar quantum numbers in condensed matter physics will be reviewed. The source of spin-charge separation and fractional charge in conducting polymers has to do with solitons in broken symmetry states. For superconductors with an energy gap, which is odd under time reversal, reverse spin-orbital angular momentum pairing occurs. In the fractional quantum Hall effect, quasi particles of fractional charge occur. In superfluid helium 3, a one-way branch of excitations exists if a domain wall occurs in the system. Many of these phenomena occur due to vacuum flow of particles without crossing the excitation of the energy gap.

John Robert Schrieffer received his bachelor's degree from Massachusetts Institute of Technology in 1953 and his Ph.D. from the University of Illinois in 1957. In addition, he holds honorary Doctor of Science degrees from universities in Germany, Switzerland, and Israel, and from the University of Pennsylvania, the University of Cincinnati, and the University of Alabama.

Since 1992, Dr. Schrieffer has been a professor of Physics at Florida State University and the University of Florida and the Chief Scientist of the National High Magnetic Field Laboratory. He also holds the FSU Eminent Scholar Chair in Physics.

Before moving to Florida in 1991, he served as director for the Institute for Theoretical Physics from 1984-1989 and was the Chancellor's Professor at the University of California in Santa Barbara from 1984-1991. He was the Mary Amanda Wood Professor of Physics at the University of Pennsylvania from 1964-1979.

In 1968, Dr. Schrieffer received the Oliver E. Buckley Solid State Physics Prize and the Comstock Prize of the National Academy of Science. In 1972, he received the Nobel Prize in Physics, jointly with John Bardeen and Leon Cooper, for the microscopic theory of superconductivity. In 1984, he received the National Medal of Science.

Dr. Schrieffer served as president of the American Physical Society in 1996, and he is a member of the academies of science of the United States, Denmark, Russia, and Korea.

Presently, Dr. Schrieffer's research is focused on the theory of high temperature superconductivity and magnetism in condensed matter systems.
