THURSDAY, November 12, 2009, - 4:00 PM - ROOM 1-425
Refreshments at 3:30pm - 2nd floor outside room 1-425

ROMAN W. JACKIW,
Jerrold Zacharias Professor of Physics
MIT

Fractional Charge

Abstract:

A key lesson of quantum mechanics is that dynamical quantities, which in classical physics take arbitrary values, become quantized within quantum mechanics, for example energy, angular momentum, etc. Here I shall describe a quantum effect that goes in the opposite direction: classical quantities that possess integrality, like particle number, can become fractional due to quantum effects. This phenomenon is playing a central role in contemporary condensed matter physics, and relies on unanticipated mathematical structures in the spectrum of the relevant quantum operators.