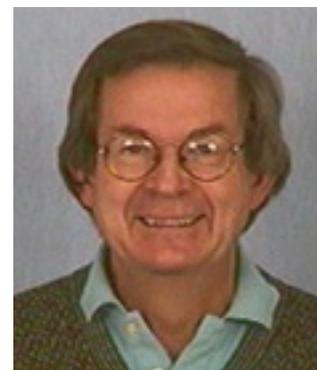


T_cSUH Special Seminar

Texas Center for Superconductivity at the University of Houston



Professor John Ruvalds

Professor Emeritus
Physics Department
University of Virginia
Charlottesville, VA

“Nesting Phenomena in High Temperature Superconductors”

Thursday, May 11, 2006

Room 634, Science and Research 1

4:00 p.m. – 5:00 p.m.

Abstract

The anomalous quasiparticle damping and high temperature superconductivity in cuprates is explained by Coulomb interactions among electrons [or holes] on a nested Fermi surface. In YBCO and other copper oxides, a nearly half filled tight binding energy band naturally produces nesting in the form of parallel segments of the square Fermi surface. Our Nested Fermi Liquid theory derives the anomalous quasiparticle damping and provides a mechanism for d-wave superconductivity at room temperature. Neutron , photoemission, and light scattering experiments confirm various predictions of the nesting theory. Our analysis predicts new materials, such as sulfides, that may become superconducting when a competing spin density wave is suppressed.

Bio

Prof. John Ruvalds earned a Ph.D. at the University of Oregon in 1967, then joined the University of Chicago as Research Associate, and moved to the University of Virginia as Assistant Professor in 1969. He became Associate Professor in 1971, Full Professor in 1977, and Professor Emeritus last year.

He has been a Visiting Associate Professor at the University of Chicago, Sesquicentennial Fellow and visiting Professor at Harvard, Stanford, UC Santa Barbara, and UC La Jolla.

His research groups have included scientists from 15 nationalities. Research Associate Attila Virosztek won two Hungarian Academy prizes and graduate student David Djajaputra won top UVA prizes for the work on high temperature superconductors.

Prof. Ruvalds' teaching of undergraduate students at UVA was honored by election to the Raven Society.

Persons with disabilities who require special accommodations in attending this lecture should call (713) 743-8210 as soon as possible.



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