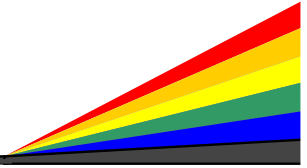


APS COLLOQUIUM SERIES



SPEAKER: Samuel A. Werner
National Institute of Standards and Technology
and the University of Missouri-Columbia

Samuel Werner is internationally known for his research using neutron scattering and neutron interferometry. He started his career as a staff scientist at Ford Motor Company's Scientific Laboratory in Dearborn, Michigan, and then moved to the University of Missouri where he held the titles of Millsap Distinguished Professor and Curators' Professor in the Physics Department. He has served as president of the Neutron Scattering Society of America and as chairman of the Board of Assessment of the Physics Laboratory at NIST, appointed by the National Research Council. He is the co-author of the recent book *Neutron Interferometry*, published by Oxford University Press, and is a Fellow of the American Physical Society and a member of the Austrian Academy of Sciences. He is currently a scientific consultant at NIST.

TITLE: Observation of Berry's Geometric Phase and the Scalar Aharonov-Bohm Effect by Neutron Interferometry

The total phase acquired during an evolution of a quantal system has two components: the usual dynamical phase and a geometric phase, which depends only on the geometry of the curve C traced in ray space. We have performed an interference experiment using polarized neutrons that clearly demarcates the separate contributions of these phases to the total. We have also observed the phase shift of longitudinally polarized neutron de Broglie waves due to the action of a scalar potential in an otherwise field-free (i.e., force-free) region of space. This is the first clear observation of the scalar Aharonov-Bohm effect.

DATE: Wednesday, September 6, 2000

TIME: 4:15 p.m.

LOCATION: 402 Auditorium

Refreshments will be served at 4:00 p.m.