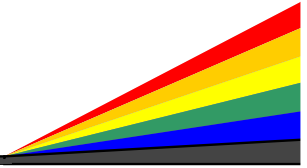


APS COLLOQUIUM SERIES



Speaker: **H. A. Mook**
 Oak Ridge National Laboratory

Dr. Mook is internationally known for his work on neutron scattering studies of Condensed Matter. He is a Senior Corporate Fellow at ORNL and head of the neutron scattering program. Much of his early research concentrated on studies of the magnetic excitations of transition metal ferromagnets and the observation of itinerant electron effects in these materials. He also has a longstanding interest in quantum fluids and has obtained results on the Bose condensate in 4He and on the Fermi surface of 3He . Recent work has concentrated on highly-correlated electron materials with particular emphasis on the high- T_c cuprate superconductors. He was the first to determine incommensurate wavevectors of the magnetic scattering in both the $\text{La}_x\text{Sr}_{1-x}\text{CuO}_4$ (214) and the $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ (123) materials and to demonstrate the nature of the resonance in the (123) superconductors. He was also the first to observe the vortex lattice in these materials by neutrons and measure vortex lattice melting. The most recent work has concentrated on charge fluctuations in the (123) materials and the role of striped phases.

Title: **Are we making any progress on the high- T_c superconductivity problem?**

A decade has passed since the discovery of the high-transition temperature cuprate superconductors and despite a vast amount of effort there is little consensus on the mechanism responsible for the superconductivity. However, recent neutron scattering results are providing a detailed account of the electronic spin and charge behavior in these materials. These results will be discussed in terms of approaches that may yield a solution to the problem.

DATE: Wednesday, November 3, 1999

TIME: 4:15 p.m.

LOCATION: 402 Auditorium