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Baton Rouge, Louisiana 70803-4001

WEEKLY CALENDAR

November 9, 2009

Departmental Colloquium

"Failed Theories of Superconductivity"

3:40 PM, November 12, 2009
109 Nicholson Hall

Joerg Schmalian
Iowa State University and Ames Laboratory

Host: Ilya Vekhter/Daniel Sheehy

• Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall •

The microscopic theory of superconductivity was developed by Bardeen, Cooper and Schrieffer. It was published in 1957; 46 years after the original discovery of the phenomenon by Kammerlingh Onnes. During the intervening years numerous scientists tried and failed to develop an understanding of superconductivity. Among them were the brightest minds in theoretical physics. In this talk I will give a short summary of some of those failed attempts to understand superconductivity. This is done to demonstrate that mistakes are a natural and healthy part of the scientific discourse. It also demonstrates the dimension of the endeavor undertaken by Bardeen, Cooper and Schrieffer.

Seminar

"Inferring the Cooper pair wave function of the iron arsenide superconductors from their phase diagram."

1:30 PM, November 13, 2009
435 Nicholson Hall

Joerg Schmalian
Iowa State University and Ames Laboratory

We use simple coexistence rules for the phase diagram of the iron arsenides to deduce the pairing state in these new superconductors. Recent experimental evidence in the iron arsenide superconductor $\text{Ba}(\text{FeCo})_2\text{As}_2$ demonstrates that antiferromagnetic long range order coexists with bulk superconductivity. We show that static antiferromagnetism can be used to probe the Cooper pair wave function in this coexistence region.

Publications:

"The Wigner Distribution," in "Compendium of Quantum Mechanics," R. F. O'Connell, edited by D. Greenberger, B. Falkenburg, K. Hentschel and F. Weinert, (Springer, New York, 2009).