

# Physics Colloquium

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**Title:** Superconductivity in Strange Places: from Diamonds to Nukes

**Abstract:** This past year celebrated the 50<sup>th</sup> anniversary of the Bardeen-Cooper-Schrieffer theory of superconductivity. As BCS explained, superconductivity arises from a lattice-mediated attractive interaction between electrons of opposite spin and momentum, a framework that has been very successful in accounting for superconductivity in a wide variety of materials. Except for rare occasions, though, this theory has been unable to predict where new superconductors might be found. The past several years have shown that perhaps the most unexpected places to look for new examples are where the most interesting ones lie. High temperature superconductivity in cuprates is the most well-known case, but more recently, superconductivity has appeared in equally unsuspected places -- diamond, nuclear materials and several others, including at the border of magnetic order. With many hundreds of known superconductors, why should we care about yet other examples? As will be discussed, each of these are telling us something new that helps guide, if not predict, other strange places to look, ranging from silicon to even room temperature. It is in strange places where new physics has been and will continue to be found.

**Monday January 14, 2008**  
**4:10 PM - Room 55 Roessler Hall**