

15th November 2011 - 14:15
FLASH HALL (28c) - Seminar Room

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The fascinating properties of unconventional superconductors

The theoretical explanation of superconductivity almost 50 years after the discovery of the phenomenon is a hallmark of many-body physics and is still considered the basis of our understanding. However, the discovery of superfluidity in ^3He and of transition temperatures T_c in excess of 100 K in the copper-oxygen compounds demonstrated the need for augmentation pertaining mainly to the type of interactions responsible for Cooper pairing. These interactions are in fact in the main focus of interest of theorists and materials scientists, since they may lead us to superconductors with more application-friendly properties.

In my presentation I summarize the basic concepts driving the development of new superconductors and the understanding of their properties. I will demonstrate the power of spectroscopic methods on the way towards unraveling the "glue" binding electrons to pairs with some emphasis placed on our own light scattering experiments. Finally, I will briefly discuss existing and future applications of superconductors.

