

## **A Common Thread: the pairing mechanism in the unconventional superconductors**

**D. J. Scalapino**

University of California, Santa Barbara, CA 93106-9530, USA

The structures, the phase diagrams, and the appearance of a neutron resonance signaling an unconventional superconducting state provide phenomenological evidence relating the heavy fermion, cuprate and Fe superconductors. Single- and multi-band Hubbard models have been found to describe a number of the observed properties of these materials so that it is reasonable to examine the origin of the pairing interaction in these models. Here based on the experimental phenomenology and studies of the pairing interaction for Hubbard-like models, we suggest that spin-fluctuation mediated pairing is the common thread linking this broad class of superconducting materials. We will also discuss possible ways to increase  $T_c$  based upon these ideas.