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**Gap structure of iron-based superconductors via directional thermal conductivity**

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Because the structure of the superconducting gap as a function of direction reflects the pairing interaction, it can shed light on the nature of the pairing mechanism. In the iron pnictides, the experimental situation in this respect remains unclear and so far suggests the lack of a universal picture. Here I present a systematic study of the superconducting gap structure through directional thermal conductivity measurements [1] on hole-doped K-Ba122 [2,3], electron-doped Co-Ba122 [4,5], self-doped LiFeAs [6] and the chalcogenide FeTeSe. We observe a general trend for the evolution of the superconducting gap with doping. At optimal doping, the gap structure is nodeless and isotropic (3D). Away from optimal doping, nodes appear on the Fermi surface at the edges of the superconducting dome, as seen for K-Ba122 and Co-Ba122. This strongly suggests that the presence of these nodes is accidental and therefore not imposed by symmetry. It would instead depend on the competition between intra- and inter-band interactions controlled by the evolving band structure and Fermi surface, and by the onset of antiferromagnetic order.

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