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Superconductivity and magnetism in 111 iron pnictides[1]

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We study different 111 materials at ultra low temperatures by means of angle-resolved photoemission spectroscopy (ARPES). The measurements provide a direct access to the information on the low energy electronic structure, which includes the detailed knowledge of the Fermi surface, band renormalization, electronic self-energy and symmetry of the superconducting order parameter. The results suggest a direct correlation between the fermiology and fundamental physical properties throughout the phase diagram of 111 iron superconductors. In particular, the Van Hove singularity is identified as playing a primary role for the superconductivity.

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