

Search For New Quasi Low Dimensional Superconductors and Semiconductors

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Abstract. Advanced crystal growth techniques have enabled synthesis of high quality quasi - low dimensional model materials suitable for experimental probes that are sensitive to electronic anisotropy. Recent discovery of quasi 2D Ce – based heavy fermion superconductors paved the way for deeper understanding of unconventional superconductivity in this class of materials [1]. The very rich spectrum of structurally tuned electronic states on the magnetic boundary shows some striking examples of the k – space inhomogeneity, for example the anisotropic destruction of the Fermi surface at the Quantum Critical Point [2]. In this talk I will review some new materials and examples of the model electronic systems in the field, such as interplay of superconductivity and magnetism in $\text{Nd}_{1-x}\text{Ce}_x\text{CoIn}_5$ and the rich physics in the recently discovered nearly magnetic or “heavy fermion” semiconductor FeSb_2 [3],[4].

REFERENCES

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