

Title : Dual character of the cuprate strange metal

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In this presentation, I will describe my group's recent studies of the (magneto)-transport properties of hole-doped cuprates across the strange metal regime in high magnetic fields up to 70 Tesla. By investigating three distinct families of hole-doped cuprates - $\text{Ti}_2\text{Ba}_2\text{CuO}_{6+\delta}$, $\text{La}_{2-x}\text{Sr}_x\text{CuO}_4$ and La/Pb-doped $\text{Bi}_2\text{Sr}_2\text{CuO}_{6+\delta}$ – a common picture begins to emerge of two charge sectors coexisting within the strange metal phase of overdoped cuprates, one harboring coherent Landau quasiparticles, the other incoherent 'Planckian' dissipators. Curiously, as the contribution from the latter grows with reduced doping, so too does the superconducting condensate. Finally, a link is established between the quadrature scaling of the magnetoresistance at high field strengths and the so-called separation of lifetimes seen at low-fields.

Recent references:

- 1) C. Putzke *et al.*, *Nature Physics* **17**, 185-189 (2021)
- 2) M. Čulo, C. Duffy *et al.*, *SciPost Physics* **11**, 012 (2021)
- 3) J. Ayres, M. Berben *et al.*, *Nature* **595**, 661-666 (2021)
- 4) M. Berben, J. Ayres *et al.*, *arXiv:2203.04867* (2022)