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Anisotropic breakdown of Fermi liquid quasiparticle excitations in overdoped La2−xSrxCuO4 JOHAN CHANG, MARTIN MAANSSON, Institute for Condensed Matter Physics, École Polytechnique Fédérale de Lausanne (EPFL), CH-1015 Lausanne, Switzerland, STEPHANE PAILHES, Institut Lumière Matière, UMR5306 Université Lyon 1-CNRS, Université de Lyon, 69622 Villeurbanne, France, OLIVER LIPSCOMPE, STEPHEN HAYDEN, H. H. Wills Physics Laboratory, University of Bristol, Bristol BS8 1TL, UK, LUC PATTHEY, Swiss Light Source, Paul Scherrer Institut, CH-5232 Villigen PSI, Switzerland, OSCAR TJERNBERG, KTH Royal Institute of Technology, Materials Physics, S-164 40 Kista, Sweden, JOEL MESOT, Swiss Light Source, Paul Scherrer Institut, CH-5232 Villigen PSI, Switzerland — High-temperature superconductivity emerges from an un-conventional metallic state. This has stimulated strong efforts to understand exactly how Fermi liquids breakdown and evolve into an un-conventional metal [1,2]. A fundamental question is how Fermi liquid quasiparticle excitations break down in momentum space. Here we show, using angle-resolved photoemission spectroscopy, that the Fermi liquid quasiparticle excitations of the overdoped superconducting cuprate La1.77Sr0.23CuO4 is highly anisotropic in momentum space [3]. Fermi liquid excitations are found in the anti-nodal region whereas conventional Fermi liequid excitations are probed around the nodal point [3].

[1] R. A. Copper *et al.*, *Science* **323**, 603–607 (2009).
[2] K. Jin *et al.*, *Nature* **476**, 73–75 (2011).
[3] J. Chang *et al.*, *Nature Communications* **4**, 2559 (2013).

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