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Anisotropy of transport coefficients in the pseudogap phase of the cuprate superconductor YBCO OLIVIER CYR-CHOINIÈRE, GAËL GRISSONNANCHE, NICOLAS DOIRON-LEYRAUD, LOUIS TAILLEFER, Université de Sherbrooke, JAMES DAY, RUIXING LIANG, DOUG BONN, WALTER HARDY, University of British Columbia — We recently discovered evidence of a broken rotational symmetry in the pseudogap phase of the cuprate superconductor $YBa_2Cu_3O_y$ [1]. This broken symmetry was inferred from the onset of a large in-plane anisotropy of the Nernst coefficient N below the pseudogap temperature $T^\star$, attributed to an anisotropy in the longitudinal coefficients, i.e. the resistivity ρ and/or the Seebeck coefficient S. It was pointed out that an anisotropy in N could also come from an anisotropy of the transverse coefficients, i.e. the Hall and Peltier coefficients, σ_{xy} and α_{xy} [2]. We report here a complete study of the anisotropy of all transport coefficients in a YBCO single crystal. The measurements were performed first with the sample oriented along the b-axis direction and, then along the a-axis direction achieved by rotating the CuO chain direction via detwinning. We therefore extract the anisotropy of the transport coefficients without uncertainty from geometric factors or sample dependence. We discuss the possible implications of these transport anisotropies for the physics of the pseudogap phase.

[1] R. Daou *et al.*, *Nature* **463**, 519 (2010).
[2] C. Varma *et al.*, *arXiv* 1007.1215 (2010).

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