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**Frustrated metallicity in the quasi-one-dimensional conductor $PrBa_2Cu_4O_8$** ALESSANDRO NARDUZZO, ARAZ ENAYATI-RAD, University of Bristol, FLORENCE RULLIER-ALBENQUE, SPEC, CEA, Paris, SHIGERU HORII, University of Tokyo, NIGEL HUSSEY, University of Bristol — We have investigated the ground state of the extremely anisotropic quasi-one-dimensional metal $PrBa_2Cu_4O_8$ ($t_b^2 : t_a^2 : t_c^2 \sim 4000 : 2 : 1$), the non- superconducting analogue of the high-$T_c$ cuprate $YBa_2Cu_4O_8$, as a function of disorder content, introduced either through atomic-site substitution or electron irradiation. A common single disorder threshold is found to drive interchain and in-chain resistivities into a low temperature regime where they display $d\rho/dT < 0$. The survival of a large magnetoresistance of orbital origin reveals the itinerancy of the electronic system not to be suppressed by the presence of disorder. We propose an interpretative scenario based on a microscopic fragmentation of the metallic chains, though in contrast to many previous theoretical proposals, coherent hopping between chains appears to remain a relevant perturbation within the disordered system.

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