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Mott Quantum Criticality in the Anisotropic 2D Hubbard Model¹ BENJAMIN LENZ, SALVATORE R. MANMANA, THOMAS PRUSCHKE, Institute for Theoretical Physics, University of Göttingen, FAKHER F. ASSAAD, MARCIN RACZKOWSKI, Institute for Theoretical Physics and Astrophysics, University of Würzburg — We present evidence for Mott quantum criticality in an anisotropic two-dimensional system of coupled Hubbard chains at half-filling. In this scenario emerging from variational cluster approximation and cluster dynamical mean-field theory, the interchain hopping t_{\perp} acts as control parameter driving the second-order critical endpoint T_c of the metal-insulator transition down to zero at $t_{\perp}^c/t \simeq 0.2$. Below t_{\perp}^c the volume of hole and electron Fermi pockets of a compensated metal vanishes continuously at the Mott transition. Above t_{\perp}^c the volume reduction of the pockets is cut off by a first-order transition. We discuss the relevance of our findings to a putative quantum critical point in layered organic conductors whose location remains elusive so far.

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