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Disordered quantum critical fixed points from holography

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Using holographic duality, we present an analytically controlled theory of quantum critical points without quasiparticles, at finite disorder and finite charge density. These fixed points are obtained by perturbing a disorder-free quantum critical point with relevant disorder whose operator dimension is perturbatively close to Harris marginal. We analyze these fixed points both using field theoretic arguments, and by solving the bulk equations of motion in holography. We calculate the critical exponents of the IR theory, together with thermoelectric transport coefficients. Our predictions for the critical exponents of the disordered fixed point are consistent with previous work, both in holographic and nonholograpic models.

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