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A critical fixed point of QED_3 with quenched disorder ALEX THOMSON, SUBIR SACHDEV, Harvard University — Quantum electrodynamics in 2+1-dimensions (QED_3) describes a critical phase of matter known as the algebraic spin liquid. It is a strongly coupled conformal field theory with a U(1) gauge boson coupled to $4N_f$ two-component massless fermions. At $N_f = 1$, this is a proposed ground state of the spin-1/2 kagome Heisenberg antiferromagnet. We study the behaviour of QED_3 in the presence of weak quenched disorder in its two spatial directions. When the disorder explicitly breaks the fermion flavour symmetry from $SU(4N_f) \to U(1) \times SU(2N_f)$, we find that the theory flows to a non-trivial critical point with a dynamical critical exponent $z > 1$. At this critical point, we determine the zero-temperature spin conductivity. Our calculations are done in the large-N_f limit and the disorder is handled using the replica method.

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