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Superconductivity and bad metal behavior near a nematic quantum critical point SAMUEL LEDERER, Massachusetts Inst of Tech-MIT, YONI SCHATTNER, EREZ BERG, Weizmann Institute, STEVEN KIVELSON, Stanford University — Using determinantal quantum Monte Carlo for systems of size up to 24×24, we compute the properties of a lattice model with spin $\frac{1}{2}$ itinerant electrons tuned through a quantum phase transition to an Ising nematic phase. We find that the nematic fluctuations induce superconductivity with a broad dome in the superconducting T_c enclosing the nematic quantum critical point. For temperatures above T_c, we see strikingly non-Fermi liquid behavior of the electron spectral properties – including a "nodal - anti nodal dichotomy" reminiscent of that seen in high T_c cuprates - and "bad metal" behavior of the conductivity.

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