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**Inhomogeneous phase formation on the border of itinerant ferromagnetism** ANDREW G. GREEN, University of St Andrews, GARETH J. CONDUIT, Weizmann Institute, BEN D. SIMONS, University of Cambridge — A variety of analytical techniques suggest that quantum fluctuations lead to a fundamental instability of the Fermi liquid that drives ferromagnetic transitions first order at low temperatures. We present both analytical and numerical evidence that, driven by the same quantum fluctuations, this first order transition is pre-empted by the formation of an inhomogeneous magnetic phase. This occurs in a manner that is closely analogous to the formation of the inhomogeneous superconducting Fulde-Ferrel-Larkin-Ovchinnikov state. We derive these results from a field theoretical approach supplemented with numerical Quantum Monte Carlo simulations.

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