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Divergent nematic susceptibility in an iron arsenide superconductor HSUEH-HUI KUO, Stanford University, JIUN-HAW CHU, JAMES ANALYTIS, University of California, Berkeley, IAN FISHER, Stanford University — Within the Landau paradigm of continuous phase transitions, ordered states of matter are characterized by a broken symmetry. Although the broken symmetry is usually evident, determining the driving force behind the phase transition can be complicated by coupling between distinct order parameters. We show how measurement of the divergent nematic susceptibility of the iron pnictide superconductor $Ba(Fe_{1-x}Co_x)_2As_2$ distinguishes an electronic nematic phase transition from a simple ferroelastic distortion. These measurements also indicate an electronic nematic quantum phase transition near the composition with optimal superconducting transition temperature.

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