Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Magnetism and superconductivity in $\mathbf{Pd_{1-x}Fe_xTe}$ AMAR KARKI, SHANE STADLER, DANA BROWNE, JIANNENG LI, RONGYING JIN, Louisiana State University — PdTe is a long-known superconductor but its physical properties are almost unknown. We have recently studied its basic physical properties in both normal and superconducting states. While FeTe forms different crystallographic structure and is known to form spin density wave below T_N = 70 K, we have successfully synthesized $Pd_{1-x}Fe_xTe$ with x from 0 to 1. By measuring its electrical and magnetic properties, we establish the phase diagram of $Pd_{1-x}Fe_xTe$ for the first time. With increasing x, we found that $T_c$is quickly suppressed. Ferromagnetism appears for the samples with $x \geq 0.02$. For $0.25 \leq x \leq 1.0$, the system exhibits antiferromagnetic ordering with T_N increasing with x. This is a prototype system for studying the interplay between superconductivity and magnetism.

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Date submitted: 14 Nov 2011 Electronic form version 1.4