Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Magneto-Resistance at the Pre-Martensite Transition in Ni_2MnGa C. P. OPEIL, Boston College, J. C. LASHLEY, J. L. SMITH, Los Alamos National Laboratory — A magneto-resistance and angle resolved photoemission (ARPES) study of the pre-martensite phase of the ferromagnetic shape memory alloy single crystal Ni_2MnGa, reveals a temperature ($235 \geq T \geq 190$ K) and field dependent (0 – 1 T) positive/negative magneto-resistance slope. Previous inelastic neutron scattering experiments (Zheludev et al., PRB **51**, 1995) on this Heusler alloy indicate a phonon branch [110]-TA_2 softening in the pre-martensite phase along $\mathbf{q} = (1/3, 1/3, 0)$. This phonon softening combine with our ARPES data show that significant depletion of states (pseudo gap) occur at the premartensitic transition temperature. Recent results (Shapiro et al., EPL **77**, 2007) reveal phasons associated with the charge density wave (CDW) resulting from Fermi surface (FS) nesting. Our experimental results will be discussed in light of electron-phonon coupling.

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Date submitted: 27 Nov 2007 Electronic form version 1.4