Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Coherent phonon in superconductor iron pnictide DAVIDE BOSCHETTO, Laboratoire d'Optique Appliquée, ENSTA, Ecole Polytechnique, 91761 Palaiseau, France, BARBARA MANSART, Laboratoire de Physique des Solides, CNRS-UMR 8502, Université Paris-Sud, F-91405 Orsay, France, ANNUNZIATA SAVOIA, Laboratoire d'Optique Appliquée, ENSTA, Ecole Polytechnique, 91761 Palaiseau, France, MARINO MARSI, Laboratoire de Physique des Solides, CNRS-UMR 8502, Université Paris-Sud, F-91405 Orsay, France — The role of phonons in high critical temperature superconductivity has been subjected to a large debate and the description of the superconductivity mechanism is still controversial. Recently, the attention of the scientific community has been focused on the new family of iron pnictide superconductors, in which all the degrees of freedom of the crystal, such as spin, lattice and charges, compete giving rise to a fascinating phase diagram. However, such strong correlations make harder to assert on the mechanism of the electrons pair formation. In order to shine light on this key point linked to the occurrence of superconductivity, we study a coherent A_{1g} optical phonon mode in time domain by measuring the transient reflectivity in iron pnictide $Ba(Fe_{1-x}Co_x)_2As_2$ (x=0.06 and 0.08) across the superconducting phase transition [1]. The phonon parameters such as frequency, amplitude and damping time are discussed as a function of both sample temperature and doping. [1] Mansart et al., Pys. Rev. B 80, 172504 (2009)

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Date submitted: 01 Dec 2009 Electronic form version 1.4