

Abstract Submitted  
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**Infrared spectroscopy of KDP under high pressure**<sup>1</sup> ANA AKRAP, CHRISTOPHER C. HOMES, Condensed Matter Physics and Materials Science Dept., Brookhaven National Laboratory, Upton, New York, RICARDO P.S.M. LOBO, Laboratoire de Physique et d'Étude des Matériaux, ESPCI-ParisTech, CNRS-UPMC, 10 rue Vauquelin, F-75231 Paris Cedex 5, France, PATRICK SIMON, CRMHT, CNRS UPR 4212, Université d'Orléans, 1D Av. de la Recherche Scientifique, 45071 Orléans Cedex 02, France — We have determined infrared reflectivity of potassium dihydrogen phosphate (KDP) in the paraelectric ( $T > T_c = 135$  K) and ferroelectric phase ( $T < T_c$ ), at pressures ranging from ambient up to 10 kbar, for polarizations parallel and perpendicular to the ferroelectric axis. As the  $T_c$  is lowered and the paraelectric phase is suppressed by pressure, we track the behavior of several relevant phonon modes. Under pressure there is a significant increase in the oscillator strength of the  $150\text{ cm}^{-1}$  mode, accompanied by its shift to lower energies. The ferroelectric soft mode is critically damped below 6.5 kbar, but becomes underdamped at higher pressures.<sup>2</sup> The coupling of the  $\nu_4$  mode at  $500\text{ cm}^{-1}$  to the ferroelectric soft mode is investigated.

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<sup>2</sup>P.S. Peercy, Phys. Rev. Lett. **31**, 379 (1973).

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