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Infrared spectroscopy of KDP under high pressure\footnote{Supported by the DOE under Contract No. DE-AC02-98CH10886.} 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 cm\textsuperscript{-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.\footnote{P.S. Peercy, Phys. Rev. Lett. 31, 379 (1973).} The coupling of the $\nu_4$ mode at 500 cm\textsuperscript{-1} to the ferroelectric soft mode is investigated.

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