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Phonon Anomalies in α-Uranium[1] XIAODONG YANG, PETER RISEBOROUGH, Physics Department, Temple University — The temperature dependence of the phonon spectra of α- uranium has recently been measured by Manley *et al.*[1] using inelastic neutron scattering and inelastic x-ray scattering techniques. Although there is little evidence of any anharmonicity, the phonon shows some softening in the optic modes at the zone boundary. In a later publication [2], an extra mode was reported to form at high temperatures, which is incompatible with a structure composed of a monoclinic Bravais lattice with a two-atom basis. We investigate the effect that the f electron-phonon interaction has on the phonon spectrum and its role on the possible formation of a breathing mode of mixed electron and phonon character.

[1] M. E. Manley, B. Fultz, R. J. McQueeney, C. M. Brown, W. L. Hults, J. L. Smith, D. J. Thoma, R. Osborn, and J. L. Robertson, *Phys. Rev. Lett.* 86 (2001), p3076.
[2] M. E. Manley, M. Yethiraj, H. Sinn, H. M. Volz, A. Alatas, J. C. Lashley, W. L. Hults, G. H. Lander, and J. L. Smith, *Phys. Rev. Lett.* 96 (2006), p125501.

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Peter Riseborough
Physics Department, Temple University

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