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**Signatures of Fermi Surface Reconstruction in Raman Spectra of Underdoped Cuprates** J.P.F. LEBLANC, University of Guelph, J.P. CARBOTTE, McMaster University, E.J. NICOL, University of Guelph — Applying a phenomenological model of the pseudogap state, due to Yang, Rice and Zhang [1], we have calculated the Raman $B_{1g}$ and $B_{2g}$ spectra as a function of temperature, as well as doping, for the underdoped cuprates. Motivated by recent angle-resolved photoemission experiments (ARPES) [2], we discuss changes in intensity and peak position brought about by the presence of a pseudogap and the implied Fermi surface reconstruction which are elements of this model. Our calculations capture the main qualitative features revealed in the extensive data set on $HgBa_2CuO_{4+\delta}$.

[1] K.Y Yang, T.M. Rice and F.-C. Zhang, PRB 73 17541 (2006).
[2] Kondo et al. Nature 457, 296 (2009).

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