University of California, Santa Barbara
Department of Physics

Physics 217B  The Many-Body Problem in CMP  Spring 2004

Prof: D.J. Scalapino   WF 8:30–9:40am, Br 3340
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Homework Assignment #4
Due Friday, May 14, 2004

Suppose you have an electron-phonon model with two Einstein modes at frequencies $\Omega_0$ and $2\Omega_0$. Let these have coupling constants $g$ and $2g$ respectively.

1. Find the effective mass.

2. Sketch a plot of the inverse electron life-time $\tau^{-1}(\omega)$ versus $\omega$.

3. Discuss what you would see in an ARPES experiment.