Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Energy functional for the three-level Lipkin model MICHAEL BERTOLLI, University of Tennessee, THOMAS PAPENBROCK, University of Tennessee and Oak Ridge National Laboratory — We compute the energy functional of a three-level Lipkin model via a Legrendre transform and compare exact numerical results with analytical solutions obtained from the random phase approximation (RPA). Except for the region of the phase transition, the RPA solutions perform very well. We also study the case of three non-degenerate levels and again find that the RPA solution agrees well with the exact numerical result. For this case, the analytical results give us insight into the form of the energy functional in the presence of symmetry-breaking one-body potentials.

Michael Bertolli
University of Tennessee

Date submitted: 08 Dec 2008 Electronic form version 1.4