6.730 PHYSICS FOR SOLID STATE APPLICATIONS

Department of Electrical Engineering and Computer Science
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PROBLEM SET 4

Issued: 3-1-00 Due: 3-8-00, at the beginning of class.

Readings:
PSSA Chapter 6
Ashcroft and Mermin, Chapters 22 and 23.

This problem set prepares you for the second part of the project by having you do similar problems in 2D. A number of problems are also visual interpretations of lattice motion, where the programs have already been written. All the necessary .m files can be `ftp`*-ed from the directory* `/afs/athena.mit.edu/user/o/r/orlando/Public`*. This problem set is also longer than the previous ones.*

Problem 4.1 1D Monatomic and Diatomic lattices on Matlab.
Use PSSA Problems 6.1 and 6.3 as a guide to experimenting with the programs. Write up a short summary of the modes for both the monatomic and diatomic lattices.

Problem 4.2 2D Monatomic square lattice.
PSSA Problem 6.4

Problem 4.3 2D Continuum Modeling.
PSSA Problem 6.5

Problem 4.4 2D Monatomic square lattice on Matlab.
PSSA Problem 6.6

Problem 4.5 Demo of lattice motion for 2D square lattice.
PSSA Problem 6.7