

## **GEOL/PHYS 6670 Geophysical Inverse Theory**

**Spring 2006**

### **TERM PAPER ASSIGNMENT**

1. Students may either (a) write a term paper on an application of inverse theory to a problem of interest to them, preferably including real computations or (b) write a term paper on a technique in inverse theory that will not otherwise be covered in class. Students will be required to give a 20 minute presentation in class on their term paper topic.
2. I have listed several acceptable topics for term papers below. Alternatively you may select another related topic subject to approval of the instructor.
3. Nominal length of reports is 5 double-spaced pages (roughly 2000 words) plus figures and bibliography (minimum of 4 references).
4. Due dates:
  - March 8, 2006 - Select term paper topic by this date and discuss with instructor
  - April 12, 2006 - Student presentations of term projects begins
  - May 5, 2006 - Term paper due

### **Topic List**

The following is intended to give you an idea of some possible topics:

Simulated annealing

Cellular automata

Neural networks

Jackknife and Bootstrap techniques

Backprojection

LSQR

SIRT

Hilbert Space approach to inverse problems

MRI vs. CT scan – physics and inversion

Medical imaging – real-time and routine applications of inverse theory

3D seismic prestack migration – setting up the inverse problem

Geophysical inverse theory applied to your own research, with actual computations. Must include new work done for this class.