

Physics 195a
Problem set number 1
Due 2 PM, Thursday, October 10, 2002

Notes about course:

- Homework should be turned in to the TA's mail slot on the first floor of East Bridge.
- Collaboration policy: OK to work together in small groups, and to help with each other's understanding. Best to first give problems a good try by yourself. Don't just copy someone else's work – whatever you turn in should be what you think you understand.
- There is a web page for this course, which should be referred to for the most up-to-date information. The URL:
<http://www.hep.caltech.edu/~fcp/ph195/>
- TA: Anura Abeyesinghe, anura@caltech.edu
- If you think a problem is completely trivial (and hence a waste of your time), you don't have to do it. Just write “trivial” where your solution would go, and you will get credit for it. Of course, this means you are volunteering to help the rest of the class understand it, if they don't find it so simple. . .

READING: Read the “Preliminaries” course note. Read sections 1,2, and 3 of the “Ideas of Quantum Mechanics” course note.

PROBLEMS:

0. Tell me all the typos and other errors in the course notes. I'll at least be grateful, and if you find enough issues of substance, I'll add bonus points to your total score.
1. Gravitational Bohr “atom”: Exercise 1 in the “Preliminaries” course note.
2. Resonances I: Exercise 2 in the “Preliminaries” course note.
3. Plum pudding model: Exercise 3 in the “Preliminaries” course note.

4. Hilbert space: Exercise 3 in the “Ideas of Quantum Mechanics” course note.
5. Time reversal: Exercise 6 in the “Ideas of Quantum Mechanics” course note.
6. Action of Gallilean transformations: Exercise 7 in the “Ideas of Quantum Mechanics” course note.