

Due Date : Tuesday December 11,2009 (when final exams begin).

Your paper should include clear definitions, logical arguments and detailed reasoning showing that you understand the physics you are presenting in your paper. Your paper should not only include ideas and concepts we discussed in class, but also your own views. I want to know why, in detail, you are taking your particular stance. Do not mix topics or write about a topic not on the list without talking to me first.

Write a 12-15 page paper on one of the following topics:

1. According to quantum mechanics we create reality rather than measure and explain it.
2. Quantum Reality: What is it and how does it change our view of the world?
3. Measurements collapsing states ... what is all this about? How does anything evolve in time?
4. Bell's experiment. What is it? What are its results? What are its implications for our view of reality?
5. Causality is essential to any acceptable scientific theory. Causality precludes non-locality. Quantum theory implies non-locality (i.e., does not include causality) and therefore it is not a "good" theory.
6. The Copenhagen interpretation of quantum mechanics. Discuss the postulates, the tools of the trade and the way quantum mechanics works. Use examples.
7. What is this EPR, Bell, entanglements, locality, faster than light, and information transfer discussion all about?
8. Cats, friends, erasers and pots..... Discuss this strange world of quantum mechanics.
9. Many Worlds supposedly deals with the collapse postulate. How does it work?

If you want me to look at "drafts" of any part(s) of your papers, I am willing to do so. Send them to me by email. Remember that I do not expect you to be a physicist or a mathematician. I want you to explain in "your own words" your understanding of the content of the seminar as reflected in the topic you have chosen. I do not expect you to reproduce derivations. You can quote results from seminar or texts when you need them. If you want to use something from class or a text, but do not fully understand it, then stop by my office and we can talk it out.