

Exam of the course :

Statistical Field Theory

2009-2010

You should send me by email [please put as a subject in the email: Exam SFT, so that I can sort out the emails easily] your comments (as a pdf file) on the paper:

Influence of dissipation on quantum coherence,
by A. J. Bray and M. A. Moore, Phys. Rev. Lett. **49** 1545 (1982).

I put below a list of questions to help you in writing your comments. This list is not exhaustive and you are certainly encouraged to add other items to your comments. Note that some of the questions (in red and denoted by *) are mandatory.

1. What is the goal of the paper
2. What do you think of the starting Hamiltonian (3)?
3. * Justify (using the results of the course) the expression for the functional integral (4)
4. * Derive explicitly the expression (5) and (7)
5. What do you think about the expression (7). Is this something you could have obtained directly without the use of path integrals? Is there an Hamiltonian that describes the evolution of the variable q ?
6. What is the idea of the calculation that will lead to (8)
7. Derive explicitly the equation (8) [Note: this is a difficult question]
8. What is the idea of the calculations leading to equation (13-15)
9. * Derive equation (18)
10. Justify (using the course) or derive the equations (19) and (20)
11. What is the physics described by these equations?
12. What are the conclusions of the paper? What do you think about these conclusions and this problem? Do you see other systems to which a similar study could apply?