PY 542: Non-Equilibrium Statistical Physics Problem Set 10, Fall 2011

Reading: This week we start discussing coarsening from the continuum viewpoint. Please read sections 9.1, 9.3, and 9.6 in the text.

Final Projects: As mentioned in class this past week, final projects will be due on Friday December 16. Please plan to be available for a period of approximately 2.5 hours in the middle of the day to be the audience for the the oral presentations of the final projects. Here are some additional guidelines:

- Please form teams of 2–3 students to work on your project. Please do this by Wednesday 11/16.
- Please provide an informal outline of your project to me by Monday 11/21. The outline can be brief and informal. I will provide comments within 48 hours of receiving your outline.
- The final project should consist of a written section that should be no longer than 6 pages in 2-column revtex format (which looks like Physical Review Letters). There should also be an oral part of the presentation should be last 15 minutes. This oral presentation time should be divided equally among the team members.
- The project itself need not be a publishable result. It could be a small-scale simulation or a theoretical calculation of some non-equilibrium phenomenon or a detailed exploration of some of the open-ended problems in the text.
- Please see me as soon as possible if you need guidance.

Problems: Due Monday, November 21 by 5:00pm.

1. Text 8.13. Hint: Start with the generic form of the transition rate in (8.79) and symbolically expand the hyperbolic tangent in a power series. That is, this expansion should consist of only two terms. If you are feeling ambitious, you can also work problem 8.14, where the symbolic expansion of the hyperbolic tangent consist of three terms.

2. Text 9.1.