PHYS 210B: Nonequilibrium Statistical Mechanics
Fall 2020

UC San Diego
PHYSICAL SCIENCES
Physics

Course Project

→ A project, related at least loosely to the theme(s) of the course, is required.

→ Projects need not present original results, but should **not** be a book report. Independent organization and analysis are required. Of course, some original work is great!

→ 10 pages + figures. Due last class. Presentation in Finals Week.

→ Collaboration and coordination are OK, but each write-up should be distinct and independent.

→ Possible topic directions include, but not limited to:

- Financial models and their shortcomings, market crashes [N.B. This topic is well traveled.]
- Turbulence, turbulent mixing
- Clustering and aggregation processes, mechanisms
- Up-gradient transport
- Transport on networks
- Phase separation; transition dynamics, spinodal decomposition
- Traffic and crowd flow
- Flocking
- Multiplicative noise processes
- Galactic evolution, collisions
- Collisionless relaxation (Lynden-Bell, et. seq.)
- (Statistical) Physics of wildfires
- Physics of molecular motors
- Self-organized criticality and its models, especially continuum
- Avalanches and avalanche processes

→ Students should discuss and OK project topics with the Instructor.

→ Topics should be OK'd prior to **November 9**.