



Physics Colloquium

Friday, 19 March 2010, 4:00pm, PSC 3046

Alexander Marshall

Simulations of nucleation in a magnetic phase transition

Nucleation is the microscopic process by which many first-order phase transitions take place. Nucleation phenomena occur all around us every day, yet our understanding of nucleation remains imperfect. We use Monte Carlo computer simulations to study the nucleation process associated with the first-order phase transition of the 2D Ising model. We study two distinct computational methods for evaluating the nucleation barrier: an established technique developed by Frenkel and coworkers, and a new method proposed by Reguera and coworkers. We demonstrate the limitations of Reguera's method in the case of low nucleation barriers.

Bryan MacDonald

Electronic Transmitter / Receiver

Communication is the most important aspect of being human. Today communication devices such as radio, television, cell phones and the internet take up such a large part of our lives that we take them for granted. In my talk I will look at the basic model of electronic transmitters and receivers employed in all modern communication devices. Topics include the common emitter feedback amplifier, oscillators, RF amplifiers, RF antennas, and a brief overview of more advanced systems.