Plan

Intro

Curie temperature for ising model is, [Phys. Rev. 65, 117 (1944)].

At high temp become antiferro or para

* Talk about magnet dipoles, how ferro at low and para at high (use mag lec)
* There is a phase transition with temp, ( maybe mention if B was a factor in t)

Iising model

* Introduce the ising model
* how it works, with energy of nearest neibours
* then talk about the simulation
* indroduce the the energy and magnitisiton equations while explaning
* how it is modedled in a 2d square, with only up and down spins

Exercise 1(convergance on equilibrium

Talk about how equilebrum in a model, rate at chich the system switch from one microstate to another equals the rate at which the system switches back

* Show that the mag graphs with a lower Beta converge on zero, while those higher stay around 1
* It switshes around beat 0.4 to 0.5
* While the energy converes at lower enegeries the lower the temps
* There is an equirbuim state

Exercise 2 (measuiring equiem aververs and show critical temp)

* Show that the mag, ab mag and energy graphs change at the critaivl temperature,
* The absolute mag shows it drop
* The mag goes up to poisitve before zero, (like a wave (anti fermion)
* Energy tciis at point of inflection
* The critail temp can be found by changing these graphs

Exescise 3(comape the excate solution (equ 16) and and numerical esitemates from the sim

State the critical temurtere

Compre the ising numerail to the exact (how it differs slightly near tc)

Compare exact to mf (how the gradient of mf is shallow at t/tc = 0.5, but it should drop dramticly instead)

Improvements to the sim

Random number

Change the shape of the sites

Include further out neighbours