Classical Simulation possible problem:

There are problems for J = 0 here.

Let’s look at Hamiltonian:

V(x) = V^{3} x\_{i} x\_{j} x\_{k}.

Once for coordinate i, if we have J = 0 . Then state will definitely sit there at J = 0. Around that point , small perturbation will make point leave J = 0 point ,thus have extremely large Lyapunov exponent.

Let’s consider what’s wrong with this, why J = 0 is ever possible in simulation?

This is due to numerical instability. We see if we change Bulish stoer method’s phase, we no longer have this divergent result.

Thus best way to solve this here is to delete this case in simulation when taking average.