



Jan 1.

## Understood Why Vary Energy

First day of the year, I spent most of my time applying to the last university (Columbia) and enjoying the holiday. But I took some free time to read up on the Lagrangian and Hamiltonian section of the beginning of the Schroeder book. I realized that the two differ by a negative sign if not for a time gradient term. For our soliton case, since we set time dependence to zero, Lagrangian and Hamiltonian only differ by an overall negative sign. So varying energy is the same as varying the Lagrangian. I finally understood Erich's comment from yesterday's email.

But superficially, now that I understand the right way, I did some mental calculation and disagree with the sign mistake that Erich told me about my equation of motion. I needed to work it out properly, but that is not for a holiday like today (when I was already very productive with applying to the last school). Tomorrow shall be the day I finish this side work and resume my own thesis project.