Jan 28. Tue.

Continue Implementing BPS Initial Grid

I continued to implement the BPS initial grid, particularly making the solver save BPS result into core dictionary as well as the BPS soliton image saved to the same folder with all the other results. This was actually not easy to do due to my compartmentalizing the BPS solution, and now I need to call a module inside that folder that plots BPS externally. This is unfortunate since I originally envisioned a complete self contained BPS package, but it is not easy to do when I need to control when and where to save the plots.

This actually happens many times during this research. It would be almost impossible to wrote a code base this large, without completely separating out the different modules, class, and functions, so that it is easy to debug and code up one part at a time. But the complete compartmentalization often backfires, when future complication arises or new flexibility of the code to answer or explore some research is required. My code is in a constant tug of war between good code that is well-compartmentalized and solves an existing problem and the need to be flexible.

Good Progress, but Still Some Trouble with SU(3)

When I solve SU(3) with BPS initial grid, the situation is much better than before. The double string result initially looks right, and the field and energy matches that of Andrew's at first. But when I let is run longer, it is apparent that the center vacuum becomes less pronounce, and energy starts sipping into the center. I figure that it might just be because my grid isn't large enough, and with larger distance between the charges, the field has space to settle in the middle.

Tomorrow I shall run SU(3) on larger grid and charge separation with BPS initial grid. Based on today's initial result, the prospect seems good. Hopefully, I will soon finally solve the problem of simulating *one* double string picture, because my project requires me to simulate *many* double string pictures to extract the string tension. My goal is to at least get over this hurdle before Februrary.