Jan 27. Mon.

After a good 2 weeks of being completely swallowed by grad school interviews, giving the THEP Seminar, and QFT problem set, I finally went back to research. I plan to devote an hour or two on research everyday from now on , or else I fear I won't finish by the end of the semester.

Continue Implementing BPS Initial Grid

I went back to the code and reviewed the BPS package. It works quite well in solving a BPS equation and plotting it (with derivative check plots), without an outside user caring about the inside work. In other words, this code is well compartmentalized and packaged.

Next, I started adding a BPS initial grid option to the main solver. The idea is as follows:

1. I guess what the inner vacuua have to be, which is actually two different vacua separated the horizontal axis, with monodromies in a way that give the charge of the quarks.
2. Then I solve the two BPS equations, corresponding to the boundary vacua to the "top" inner vacua, and another BPS soliton corresponding to the "lower" vacua to the outside boundary again.
3. I "stich" together these two BPS solitons, which is a guess of what a slice of the final 2D solution will look like far from the charge.
4. I repeat this double BPS solitons as many times as needed to fill up the space between the two charges, while the fields to the far-left and far-right of either sides of the charges remain at the boundary values.

This initial configuration then guides the code to relax to a double string configuration with vacuua that support the monodromy needed.