IRES Japan 2024: Numerical Solution of Schrödinger's Equation

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Week 3 (6/17 - 6/21)

3	17-Jun	Tried to add storage to VM, got locked out of it with an error and spent all day trying to get back in…	
3	18-Jun	Made a new virtual machine, installed all necessary packages + compilers	Spent most of last night and this morning trying to get into VM
		Rewrote code + plots for Runge-Kutta test functions sin(x) and cos(x)	Ultimately decided to cut my losses and make a new VM
		Started rewriting code + plots for eigenvalues of harmonic oscillator.	
3	19-Jun	Newton's method study	Reading + notes
		Set up office computer for use (to avoid future work loss)	
		Code for harmonic oscillator	
3	20-Jun	Code for harmonic oscillator	Successfully got correct eigenvalues (again)
		Numerov's method study	Reading + notes
3	21-Jun	Code for harmonic oscillator	Graph is being rather difficult (data storage issue of some kind)

Goals for next week : Code for "continuation method" of solving eigenvalue problem

I have kept a log of this week's endeavors in the chart attached above. It has been a week of computer troubles, but I am relieved to say that things are back on track. About halfway through the day on Monday I encountered an error in the startup process of my virtual machine before it could properly boot up and open. All my code from the previous week was stored in that previous VM, which has been rendered inaccessible. I spent the rest of Monday and Tuesday working to fix the problem but had no luck getting into the machine to retrieve my files. I finally opted in the interest of time to start fresh on an office computer (which negates the use of a Linux VM and allows me to back my work up in OneDrive more easily). Working off my memory of what I accomplished last week, I have since rewritten the Runge-Kutta testing codes and produced the plots as before. I have also written up a new program to find the eigenvalues for the harmonic oscillator and have had success obtaining the correct eigenvalues. The plot for the potential is complete, and the plot for u(x) is still in progress (I am encountering some issues with the data storage that I did not have previously). I also studied Newton's method and the Numerov method this week. I plan to begin the coding for the continuation method next week (after I have obtained the correct plots for section 5.1).