Daily Research Report

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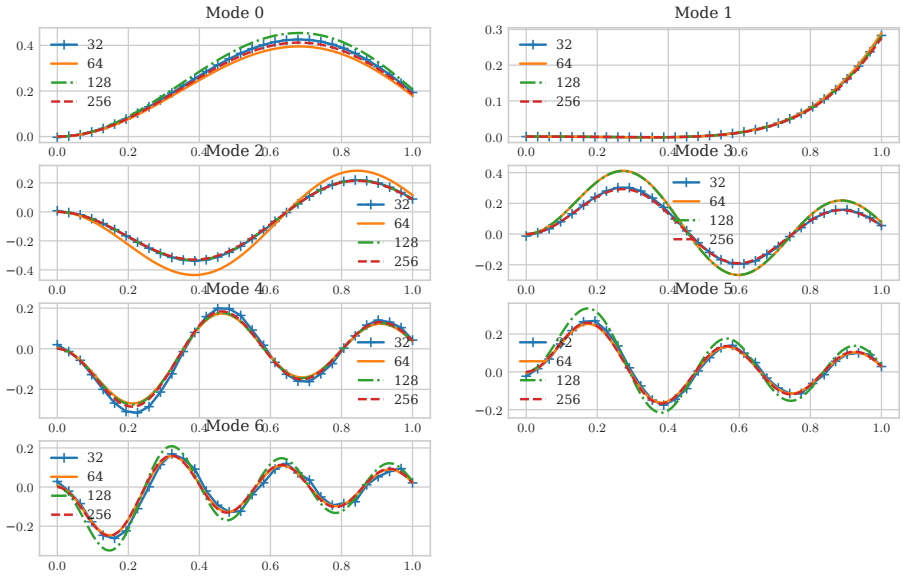
First 7 Propagating Modes [Real]



1 Current Research Direction

Finalized the post processing method for the code validation.

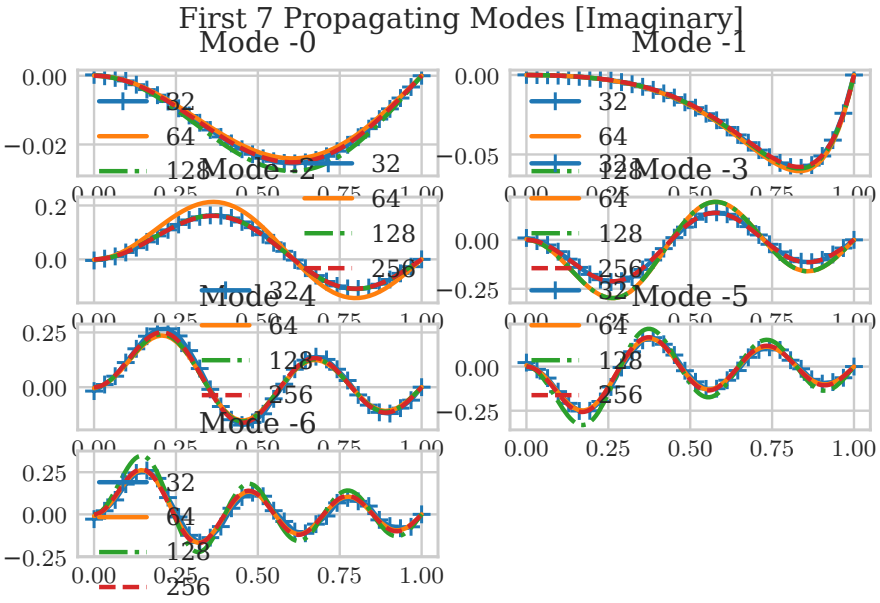
2 Research Performed

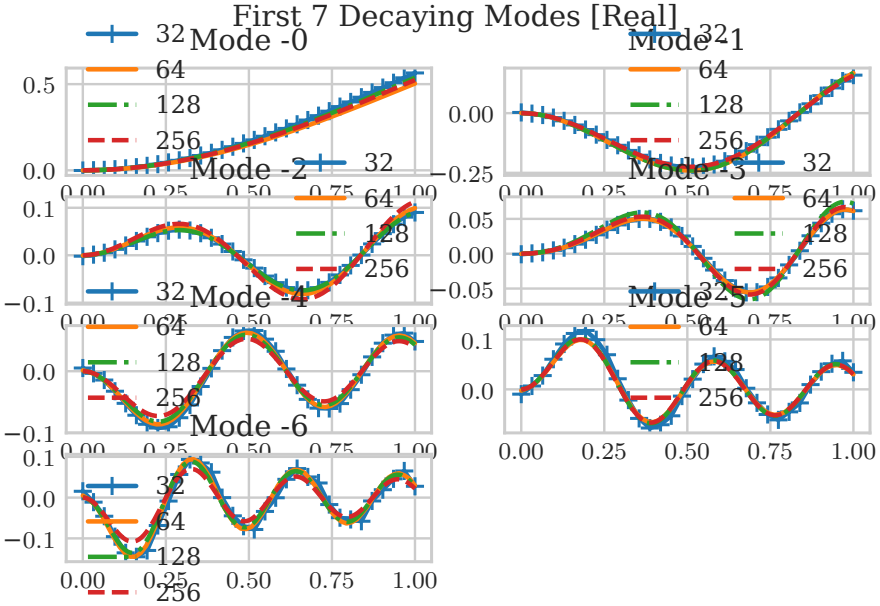
- Fixed the post processing code to take the indicies of the axial wavenumber as an input.
- Ran the same cases for fourth order differencing. If there is an index conflict, it will be easy to change.
- Explored various ways of plotting propagating and decaying modes. I think I should limit the number of modes per plot to two.

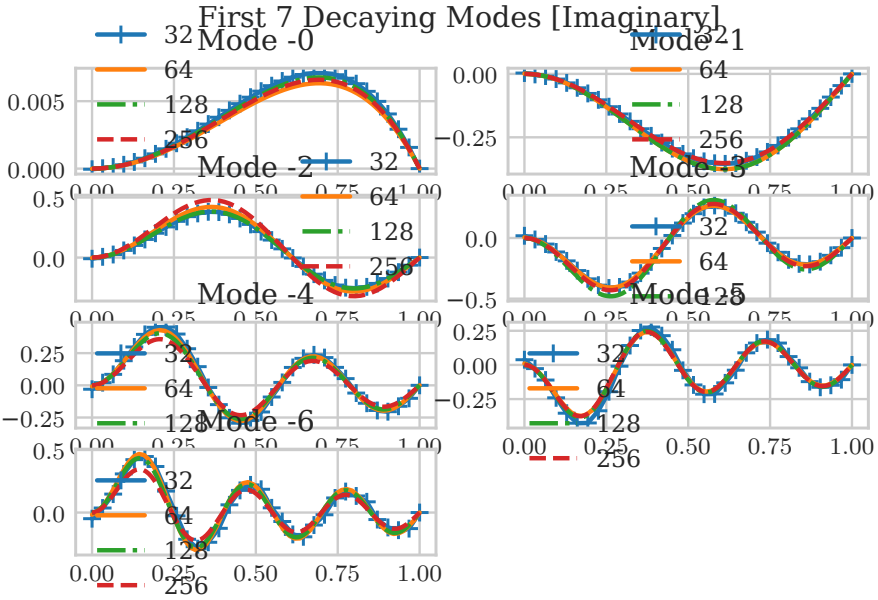
3 Issues and Concerns

Running the fourth order scheme gives me a SIGFPE error that needs investigation. Where is it coming from and is this where I absolutely need dissipation? I have not added any and I definitely need to start running smoothing coefficients to see how much is needed. Interestingly enough, there is no literature on how much to use.

The plots are way too crowded now, I need a checklist for the plots that I want to show to start building the table of figures.


First 7 Propagating Modes [Imaginary]
Mode -0
Mode -1
Mode -2
Mode -3
Mode -4
Mode -5
Mode -6
32
64
128
256


First 7 Decaying Modes [Real]
Mode -0
Mode -1
Mode -2
Mode -3
Mode -4
Mode -5
Mode -6
32
64
128
256



4 Planned Research

Plot the axial wavenumbers for the two schemes (2nd and 4th) with and without dissipation. There are modes that do not correspond to the modes reported in Shankar and Kousen. Are these modes physical? i.e. What happens to them as I add dissipation instead of higher number of grid points? What if I do both?