Washington Experimental Mathematics Lab

Stability Spectrum for PDEs

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Stability Spectrum for PDEs

Motivation To determine the stability of solutions to certain PDEs, including the MKdV equation

Problem To determine the eigenvalues of a linear operator such that the associated eigenfunctions are bounded

Methods Taking advantage of the periodicity of the coefficients using Floquet theory and Fourier series

Progress

What's worked

What hasn't

Pictures

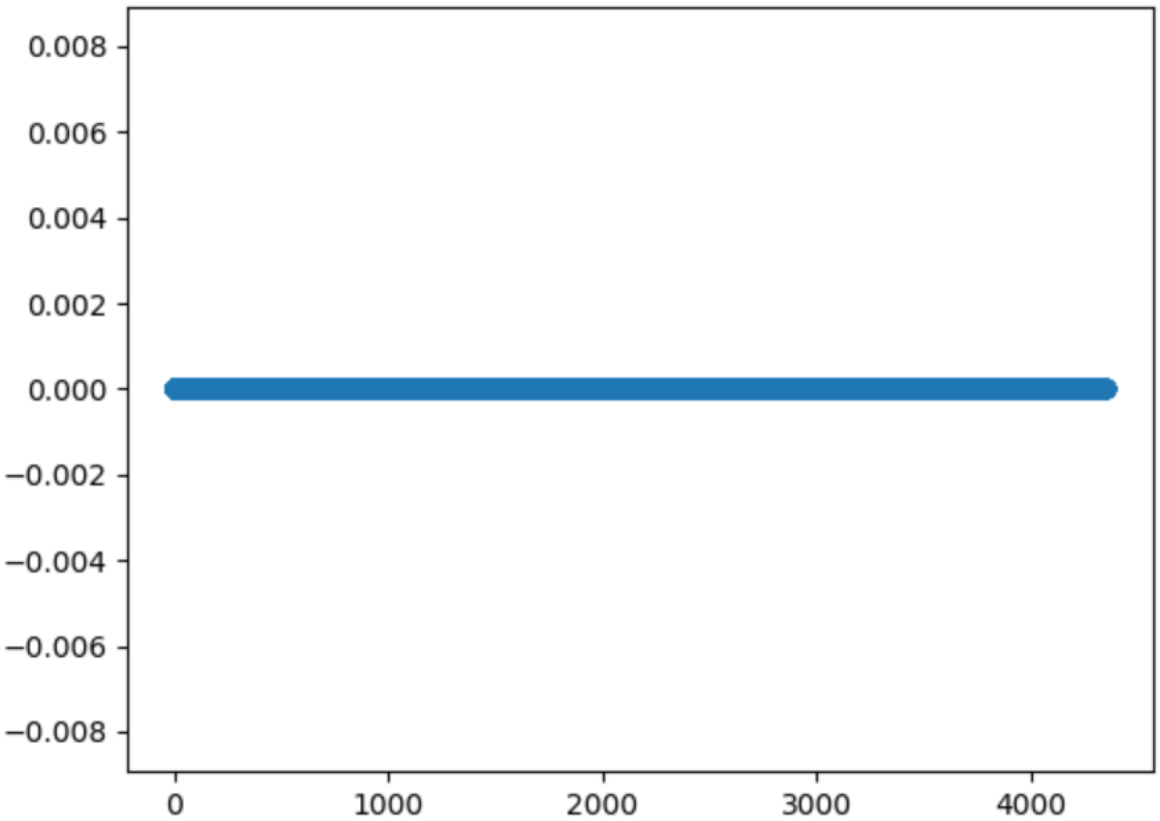

Figure: Spectrum of the operator $\mathcal{L} = -\partial_x^2 + 2q\cos(2x)$ for $q = 0.5$.

Future goals

Next steps Determining the stability of the MKdV equation

Challenges