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Spectral Fourier Continuation methods for PDE Solution

The Fourier Continuation methods, which have been successfully applied to the solution of a variety of Partial Differential Equations (PDEs), allow for highly-accurate approximation and convergence in the PDE solver. Methods based on the FC(Gram) formulation are fast (FFT speed) and exhibit minimal pollution with spectral error decay away from the boundaries and a high-order polynomial interpolation based error near the boundaries. In this talk, alternative methods for applying the FC methodology will be discussed along with demonstrating algorithms that are both fast and are capable of spectral accuracy throughout the domain. The smoothing of Fourier Continuations will also be discussed.