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## Development of high-order optimized finite difference schemes by using maximum error norm

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In this paper, we use maximum error norm to optimize explicit finite difference schemes with different stencil size and order of accuracy. These new high order finite difference schemes include schemes with order of accuracy up to twelve. The aim of such increase in order of accuracy of optimized schemes is to evaluate the effect of order of accuracy on performance of these schemes at various length-scales. We used Fourier analysis for evaluation of spectral behavior of new optimized finite difference schemes and numerical experiments to investigate some of their characteristics. By solving a linear advection equation we demonstrated order of accuracy of optimized schemes. We solved problem of convection of harmonic entropy wave with different wavelength, to evaluate performance of optimized schemes at different length-scales.

### Biography

Kaveh Fardipour is a PhD student of Aerospace Engineering in the field of Aerodynamics at Amirkabir University of Technology. He has completed his MSc in Aerospace Engineering at Sharif University of Technology and BSc in Aerospace Engineering at Amirkabir University of Technology.

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