

High Order Compact Mimetic Finite Differences

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Mimetic difference operators Div, Grad and Curl, have been constructed to provide a high order of accuracy in numerical schemes that mimic the properties of their corresponding continuum operators; hence they would be faithful to the physics. However, this faithfulness of the discrete basic operators might not be sufficient if the numerical difference scheme introduces some numerical energy increase, which would obviously result in a potentially unstable performance. We present a high order compact mimetic scheme and show that the energy of the system is also conserved in the discrete sense for 2D wave motions.