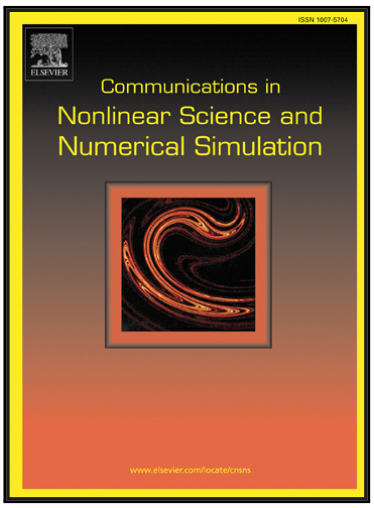

Modulational instability and discrete breathers in a nonlinear helicoidal lattice model

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Highlights

- The discrete modulational instability analysis of a helicoidal lattice with the third-neighbor coupling is performed systematically .
- The analytical solutions of discrete breather modes are obtained.
- The third-neighbor coupling plays a significant role in the properties of modulational instability and discrete breathers in the helicoidal lattice.