

Non-periodic spectral method for a nonlinear peridynamic model

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In the framework of nlocal continuum mechanics, peridynamics is a nonlocal theory able to capture singularities and fractures without using partial derivatives. We focus on a one-dimensional nonlinear model of peridynamics and propose a spectral method based on the Fourier and Chebyshev polynomials to discretize in space. The main capability of the method is that it avoids the assumption of periodic boundary condition in the solution and can benefit of the use of the fast Fourier transform (FFT).

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