

# Adaptive artificial boundary conditions for two-dimensional nonlinear Klein Gordon equation on unbounded domain

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**Abstract:** The nonlinear Klein-Gordon equation arises in various problems in science and engineering. In this paper, the numerical solution of the two-dimensional nonlinear Klein-Gordon equation, especially, the sine-Gordon equation on an unbounded domain is studied. Adaptive artificial boundary conditions are obtained by the operator splitting method and the windowed Fourier transform, then the original problem is reduced to an initial boundary value problem on a bounded computational domain, which can be solved by the finite difference method. Several numerical examples are provided to show the advantages and effectiveness of the given method, and some interesting collision behaviors are also observed.

## References:

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