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Computational solution of blow-up problems for semilinear parabolic pdes on unbounded domains
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Keywords: blow up problems; semilinear parabolic equation; unbounded domains; Laplace transformation; nonlinear absorbing boundary conditions; artificial boundary conditions; local absorbing boundary conditions; a unified approach

Review text:

A numerical treatment of a model of semilinear parabolic equations on unbounded domain where the solutions blow up in finite time is presented. The numerical approximation requires selecting an appropriate bounded computational domain. The authors present suitable local absorbing boundary conditions (LABCs) in order to derive the bounded computational domain. A unified approach to derive such LABCs for one dimensional and 2D spatial domains is presented. Numerical results to illustrate theoretical results are provided

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