

DAMPED NEWTON AND ADAPTIVE CONTINUATION METHODS WITH APPLICATIONS TO NONLINEAR PDE PROBLEMS

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Abstract

The contribution describes the solution of nonlinear systems with the use of the damped inexact Newton method and continuation techniques. Both methods will use an adaptive procedure for defining the damping parameter and the size of the continuation steps, which is based on a condition of the sufficient accuracy of the linearization. Beside the description of the methods and the corresponding theory, we show also the application of the methods to the solution of benchmark problems arising from the analysis of bridge foundations in a soil with nonlinear elastic behaviour. The performed tests show efficiency and robustness of this type of solvers.

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