PIMS / AMI Seminar

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CAB 572

"A guaranteed nonlinearly preconditioned inexact Newton algorithm based on domain decomposition method"

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Abstract

In the talk, we present a new nonlinearly preconditioner for an inexact Newton algorithm based on the domain decomposition method. The inexact Newton algorithm is preconditioned by solving a subdomain minimization problem, which is derived from the original nonlinear system. Under some necessary assumptions, we prove that the inexact Newton algorithm with the proposed nonlinear preconditioner will stop after several iterations. Some numerical test cases are carried out to verify the efficiency of the presented nonlinear preconditioner, including the comparisons between the inexact Newton algorithm with the proposed preconditioner, and with other existing preconditioners, or without preconditioner.