

## On Mixed FE-Models for Variational Inequalities

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The presentation deepens our studies on the numerical FE-treatment of systems of partial differential equations, where the solution is subjected to inequality constraints.

Especially we focus on Lagrange-settings, which can be employed to handle the given constraints. In this way additional auxiliary variables are introduced which are determined simultaneously to the original primal solution within a so-called mixed system.

On this basis efficient solution processes for the mixed systems are constructed by eliminating inequality constraints yielding nonlinear equation systems. These can easily be solved by (non-smooth) Newton-type schemes.

Furthermore concepts for a posteriori error control are reviewed and refined.

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