Hybrid discretization techniques for variational inequalities

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Hybrid discretization techniques provide a powerful tool for the numerical approximation of variational inequalities. Variational inequalities such as contact problems can be easily analyzed within the abstract framework of saddle point problems. A priori results for the displacements and the stresses can be obtained. The Lagrange multiplier plays the role of the contact pressure and enters as additional variable in the weak formulation. In terms of a local basis transformation, static condensation can be carried out. Numerical examples include incompressible materials, Coulomb friction, non-linear material laws, large deformations and thermo-mechanical coupling.

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