Carlos Rautenberg

Fixed Point Methods for Parabolic Quasi-Variational Inequalities with Gradient-type Constraints

The paper addresses existence, uniqueness and approximation methods for a certain class of nonlinear parabolic quasi-variational inequality (QVI) problems with special gradient-type constraints. Problems of this nature are common in the mathematical modeling of superconductors and ionization in electrostatics. The results are developed based on monotone operator theory, C_0 semigroup methods and recent advances on QVIs of the elliptic type. Numerical tests involving the p-Laplacian operator are provided.
Comments: The paper was developed together with Prof. Michael Hintermüller from Institut für Mathematik, Humboldt-Universität zu Berlin