

Applied Mathematics

Worst case scenario approach for convex minimization
problems with incompletely known data

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This talk concerns incompletely known data in convex minimization problems. The problems are discussed in the mixed setting and the duality gap is used as the fundamental error measure. The influence of the indeterminate data is measured using the worst case scenario approach. The decomposition of the worst case error into an approximation error and the error resulting from the incompletely known data is introduced. It allows the quantitative comparison between errors resulting from the inaccuracy of the approximation and the data uncertainty, i.e., it indicates the presence of the accuracy limit. The proposed approach together with numerical examples is demonstrated on a paradigm of a nonlinear reaction-diffusion problem.