# OPTIMIZATION UNDER UNCERTAINTY

## TRACK NUMBER: 1300 - INVERSE PROBLEMS, OPTIMIZATION AND DESIGN

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## ABSTRACT

Analysis and management of engineering systems require decision-making under uncertainty. Such uncertainty stems from the intrinsic variabilities in the system and manufacturing processes, ambiguity in the computational model due to lack of precise knowledge of the governing physics as well as noisy measurements/data. Optimization methods have widespread application in engineering decision-making. Accounting for the uncertainty in engineering models during optimization often involves dealing with high-dimensional uncertain inputs, which poses additional computational challenges. Recent advances in the fields of uncertainty quantification and machine learning provide effective tools for optimization under uncertainty. This mini-symposium aims at bringing together researchers, academics and practicing engineers concerned with the various forms of optimization in the presence of uncertainties. We seek contributions discussing novel optimization algorithms and methods, as well as applications to practical problems. Areas of interest include, but are not limited to, (multi-objective) design optimization of engineering systems under uncertainty, robust optimization, performance-based optimization, reliability-based optimization, stochastic optimization, risk management and optimization, optimal decision-making in presence of uncertainty, development and application of (machine learning) surrogate models for optimization under uncertainty, reduced order modeling, multi-level and multi-fidelity formulations and data-driven optimization.