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EFFICIENT METHODS FOR MULTI-DISCIPLINARY OPTIMISATION, PROBABILISTIC DESIGN AND OPTIMISATION UNDER UNCERTAINTY

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ABSTRACT

Shape optimisation has become an integral part in engineering design of high-performance components such as turbomachinery blades, aircraft wings or external road vehicle aerodynamics. The significant advances over the past decade with the effectiveness and robustness of gradient-based optimisation, adjoint methods and gradient-enable shape parametrisation has allowed to conceive industrial workflows that integrate these approaches.

This minisymposium brings together presentations on recent advances that extend efficient optimisation approaches to a wider range of physical problems. It will also cover progress with optimisation taking into account uncertain parameters arising from a range of sources.

In particular contributions are invited on

- adjoint-based shape optimisation for multi-disciplinary systems,
- error analysis and goal-based model adaptation
- Adjoint methods in uncertainty quantification
- Probabilistic design, robust design, design under uncertainty.

The symposium will have a particular focus on efficient approaches that are able to scale to large scale cases and industrial application.