

MULTIDISCIPLINARY ANALYSIS AND OPTIMISATION (MDAO) IN LARGE SCALE AND HIGH FIDELITY FOR INDUSTRIAL APPLICATIONS

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ARTHUR STÜCK[‡], JENS-DOMINIK MÜLLER^{*}, MARCUS MEYER[†]

[‡] German Aerospace Center (DLR)
Institute of Software Methods for Product Virtualization
Zwickauer Straße 46, 01069 Dresden, Germany
arthur.stueck@dlr.de

^{*} Queen Mary University of London
Mile End Road, London, E1 4NS, UK
j.mueller@qmul.ac.uk

[†] Rolls Royce Deutschland
Dahlewitz, Germany
Marcus.Meyer@Rolls-Royce.com

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ABSTRACT

Progress in multidisciplinary analysis and optimisation capabilities is key to meet today's challenges in the design of complex industrial products such as aircraft, engines, ground/water transport vehicles or components thereof. High numerical resolution requires advances in algorithmic and parallel efficiency of HPC computing frameworks, e.g. for coupled CFD-CSM evaluations. Gradient-based solution and optimisation algorithms need access to exact and efficiently computed sensitivity derivatives. Moreover, robust design plays a vital role, e.g. in conjunction with uncertainties in parameters or operating conditions. Usability is a success factor in the context of multiphysics and high fidelity for complex industrial applications.

This minisymposium aims to review the state of the art in integrating the disciplinary advances into large scale, complex, and/or coupled industrial scenarios.

In particular contributions are invited on

- advanced frameworks and algorithms for scalable MDAO
- geometry modelling coupled to simulation and optimisation
- robust design and uncertainty treatment
- data-driven techniques for MDAO such as surrogate and reduced-order models