



## Minisymposium 20 - Nonlinear and Stochastic Optimization

### Efficient Methods for Aerodynamic Optimization

ILIA GHERMAN (UNIVERSITY OF TRIER)

Constructing a new optimization method for geometric design of an aircraft is a very challenging task. It is clear that the optimization should be based on the existing flow solvers. A further demand on the optimization method is that it should have a low relative computational complexity.

In the MEGADESIGN project, we developed a *one-shot* method which is based on (partially) reduced SQP methods. The idea is to solve all of the equations simultaneously. The method uses existing flow solvers provided to us by the German Airspace Center. Within this framework, also additional state constraints can be included.

The developed one-shot method was efficiently applied to 2D and 3D drag minimization problems with and without additional state constraints. In this talk we will present the method as well as the numerical results.