

## Compliant Mechanism Design for Adaptive Trailing Edge Flaps

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This research is part of a bigger project where the aim is to reduce fluctuating loads on a wind turbine by using trailing edge flaps. The potential of this technique is analyzed in an aeroelastic code and the desired shape and speed of the flap is analyzed with aerodynamic codes. This part of the project aims at finding the optimal compliant mechanism using topology optimization which will actuate the flap in the desired shape. Since the desired flap must move plus/minus 10 degrees the displacements and rotations become large and a geometrically nonlinear formulation is used. The optimization problem is formulated as an error function where the desired point are given from the aerodynamic calculations. The sum of the squared error between the desired point and the obtained point are minimized. Example shows that the desired shape of a flap can be obtained.

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