Simulation of Wind Turbine Wakes using CFD Techniques
Faculty advisor: Prof. Cristina Amon

In this project, we model air flow in a wind farm to study wake behavior using CFD methods as implemented in the OpenFOAM code base. We will use the actuator disk model to represent the turbines, as we are interested more in the mid- to far-wake regions than in the detailed flow around the turbine blades. Based on the results of the simulations, we aim to formulate simplified yet accurate wake models to support optimization efforts.

Pre-requisites: (a) Previous courses in fluid dynamics, thermodynamics, numerical methods. (b) Experience using ANSYS/Fluent/CFX software, either in fluids, thermal or solid analysis. (c) Proficiency in computer programming (Matlab or C/C++).

If you are interested in this project, consider taking the course “MIE1240H: Wind Power”.