

Fluid Dynamics + Turbulence (fall 2017)

Midterm Exam Project I

Posted:

Friday September 15, 2017.

Deadline for submission of report/slides:

Friday October 13 at 09.15 am (on Blackboard).

Oral defence of submitted report/slides:

during weeks 41 + 43.

Remark: There will also be a Midterm Exam Project II, which is going to be more theoretical. You only need to do one of the two midterm exam projects. It will count 20% to your final course grade.

Midterm exam problem I: modelling and optimisation of a two-dimensional wind farm

(a) Read the paper J. Herp et.al.: *Wind farm power optimisation including flow variability*, Renewable Energy 81 (2015) 173-81. The document is contained in the folder Miscellaneous Reading of the course homepage. Implement your own simulation, and reproduce Figures 1, 4 and 5.

(b) Read the master thesis (Sections 2 + 3) of Emil Thøgersen: *Yaw controlled optimisation of wind farm power*; see also the paper E. Thøgersen et.al.: *Statistical meandering wake model and its application to yaw-angle optimisation of wind farms*, J. Phys. Conf. Series 854 (2017) 012017. Both documents are contained in the folder Miscellaneous Reading of the course homepage. Implement your own simulation, and reproduce the results contained in Subsection 3.2.