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Wind Turbine Wakes with Actuator Line Aerodynamics YULIA PEET, Arizona State University — Actuator line aerodynamics (AL) model is becoming increasingly popular for characterization of the flow field and the turbulent wake created by the rotated turbines. AL model does not require boundary layer resolution and is thus significantly more efficient than the fully-resolved computations. Thus, simulation of multiple wind turbines and characterization of turbulent wakes in such multiple-turbine configurations is possible with the current model. In this talk, we investigate the properties of wind turbine wakes calculated by Large Eddy Simulations with the actuator line model, as a function of several parameters, including Reynolds number, tip speed ratio and distance between the turbines. Spectral element fluid dynamics code Nek5000 is used for the simulations.

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