

Abstract Submitted
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Fluid-Structure Interaction Modeling of Horizontal- and Vertical-Axis Wind Turbines YURI BAZILEVS — In this talk I will present a collection of numerical methods combined into a single framework for wind turbine modeling and simulation. I will cover our turbulence modeling and discretization approach, structural modeling and discretizations for wind turbine blades, the details of fluid-structure interaction (FSI) computational procedures focusing on the challenges of FSI coupling, and fluid mechanics domain mesh motion strategies in the presence of large rotation. I will present simulations of the NREL 5MW offshore baseline wind turbine rotor, including validation against published data. I will conclude by showing preliminary simulations of a vertical-axis wind turbine design.

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