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BIG energy seminar series

Addressing global energy challenges in scale and complexity.

An Interdisciplinary, Multi-Scale Program for Research and Teaching in Wind Energy

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Professor

ForWind - Center for Wind Energy Research

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Date: Friday, October 20 at 2pm
Location: Koelbel Building, Classroom 210

Abstract:

In the further development of wind energy, technical as well as socio-economic issues are being addressed, however, specific questions also arise in the field of physics. They range, for example, from the spatial and temporal properties of the "wind fuel," to the energy conversion process in the individual wind turbines as well as in wind farm clusters, to grid integration aspects. Relevant phenomena span over eight orders of magnitude.

After a general introduction, we will present the comprehensive research and teaching program on wind physics which has been implemented by the cooperation of four groups at the University of Oldenburg in recent years. Researchers from the fields of physics, meteorology, oceanography, and engineering are conducting investigations by high-fidelity simulations as well as lab and open field experiments in both fundamentally oriented and applied applications. The research program is divided into three main areas: description and modeling of wind turbulence, interaction of turbulence and wind energy systems, and control for mitigation of turbulence effects. We will exemplify these areas by samples of current work and provide conclusions and an outlook to further research needs.

Bio:

Martin Kuehn is a full professor of the Endowed Chair of Wind Energy Systems at the Institute of Physics of the University of Oldenburg, Germany. He studied Mechanical and Physical Engineering. In the 1990s, his PhD research had a pivotal role for establishing the research field of offshore wind energy at the Delft University of Technology, The Netherlands. During his affiliation with GE Wind Energy, he acted as technical project manager for offshore turbines and wind farms. From 2004 to 2010, he held the first chair on wind energy in Germany at the University of Stuttgart. His major research topics include: dynamics and design of offshore wind energy systems, control and load monitoring of wind turbines and wind farms, and in-field measurement techniques including LiDAR sensing of wind farm flow.

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