



CREW Seminar Series: Spring 2011

Larger Blades in Bigger Farms: Interactions in Multiple Flexible Turbines

Abstract

Among the numerous critical issues in wind turbine design, the interaction between multiple wind turbines and the forces they generate on larger, more flexible wind turbine blades provides significant challenge. The mechanics of turbine blades can be represented by a wide variety of approximations and idealizations, and as cross-sectional properties and aerodynamic qualities evolve, it becomes less likely that simpler linear beam idealizations will provide sufficient accuracy. At the same time, the level of complexity of flow fields in the vicinity of turbines increases in the presence of other turbines due to local turbulence effects. In this talk, the key issues surrounding both of these problems are discussed, and preliminary results from blade mechanics models and flow past a small array of parked turbines are discussed.

By **Paul Heyliger¹** and **Karan Venayagamoorthy²**
from **Colorado State University**

On Monday, April 25, 2011, at 2:00pm

Natural Environmental Sciences Building, Room B101

Colorado State University



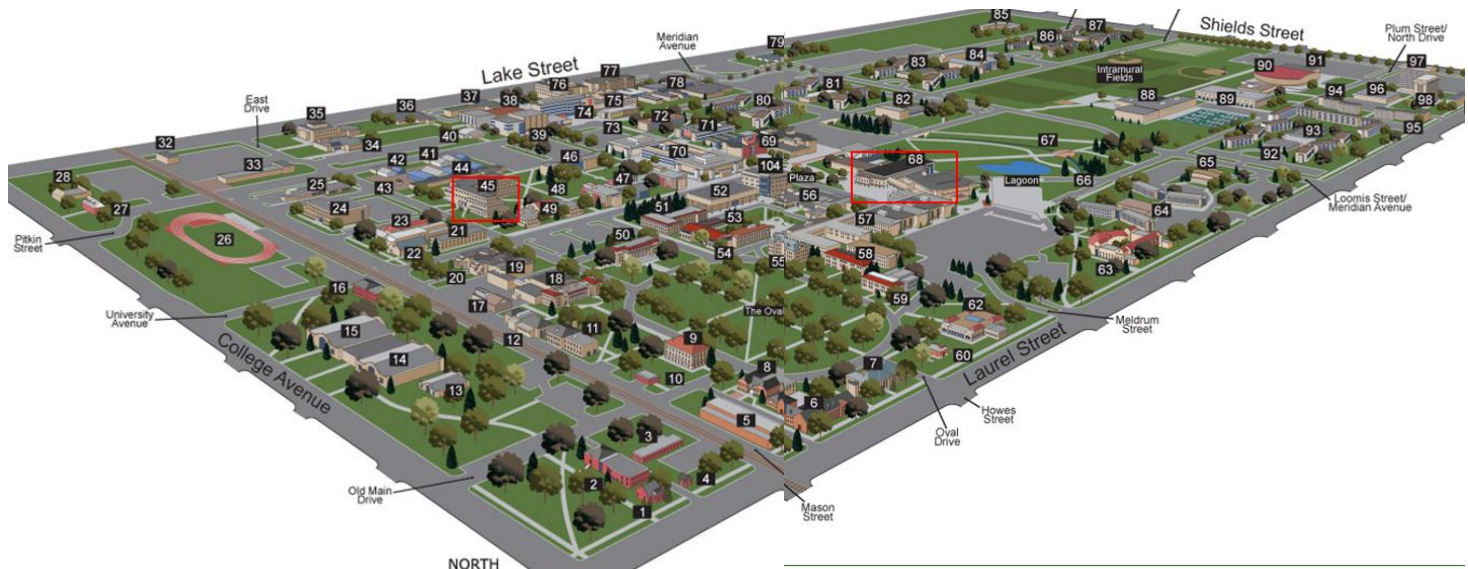
¹Dr. Paul Heyliger is a Professor of Structural Mechanics in the Department of Civil and Environmental Engineering at Colorado State University. He received his B.S and M.S in Civil Engineering from Colorado State University and his Ph. D. from Virginia Polytechnic Institute and State University. His research interests are in the areas of structural mechanics and materials.

²Dr. Karan Venayagamoorthy is an assistant professor in the Civil and Environmental Engineering at Colorado State University. He received his B.S and M.S degrees in Civil Engineering from the University of Natal in Durban, South Africa and his Ph.D. in Civil and Environmental Engineering from Stanford University. His research interests focus on environmental fluid mechanics, geophysical fluid dynamics, hydraulics and hydrology using computational flow modeling in combination with theoretical and experimental methods.



Colorado State University Campus Fort Collins, CO

Building 45 is the 'Natural and Environmental Sciences' building



Directions to suggested parking, i.e., Directions to the **Lory Student Center (building 68)**

From Interstate 25, exit at Prospect Road (#268). Travel west on Prospect approximately 4 miles to College Avenue (passing major intersections at Timberline Road and Lemay Avenue). At College Avenue, turn right (north). Continue north approximately three-quarters of a mile to Laurel Street, turn left (west), and travel west three-quarters of a mile to Meldrum Street (the second stop light), and turn left into the Lory Student Center parking lot.

- **Parking at a meter** - The Lory Student Center parking lot includes metered spaces that are enforced from 7:30a.m to 4:00pm., Monday through Friday, except for University Holidays and semester breaks. Visitor permits are not valid at meters during enforced hours - the posted fee must be paid during all enforced hours.
- **"A" zone parking** - The "A" zone spaces require a permit to park from 7:30 a.m. to 4:00 p.m. Monday through Friday (except for specially signed portions of "A" zones which are enforced until 7:00p.m.), except for University Holidays and semester breaks. Information on parking services and/or purchasing a visitor permit is available at: <http://parking.colostate.edu/index.asp?url=Others>

Looking forward to your attendance!



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