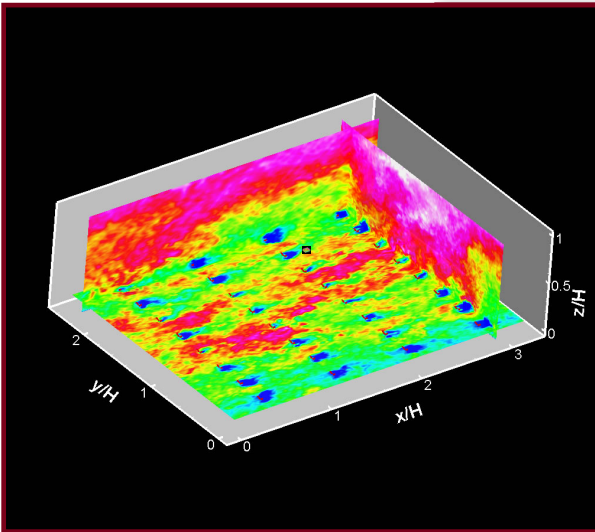


SAFL SEMINAR SERIES

WEDNESDAY, FEBRUARY 15, 2012, 3:30PM
ST. ANTHONY FALLS LABORATORY ~ AUDITORIUM

LES Study of Turbine Placement in Wind Farms Using Actuator Disk/Line Model



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Abstract: The performance of a wind farm can be improved significantly by optimizing the placement of wind turbines. In our work, we use the CUR-VIB-LES solver with turbine rotors parametrized by the actuator disk or actuator line model to study the arrangement of wind turbines in a wind farm. One fundamental step for optimizing wind-turbine placement is the understanding and modeling of the different effects of streamwise and spanwise spacing. These effects are first studied using LES with actuator disk model. Then an improved roughness height model is proposed to take into account of the different effects of the streamwise and spanwise spacing. In order to study the placement of turbines on complex terrains, a wall model which aims to capture the separation of boundary layer is also discussed.