

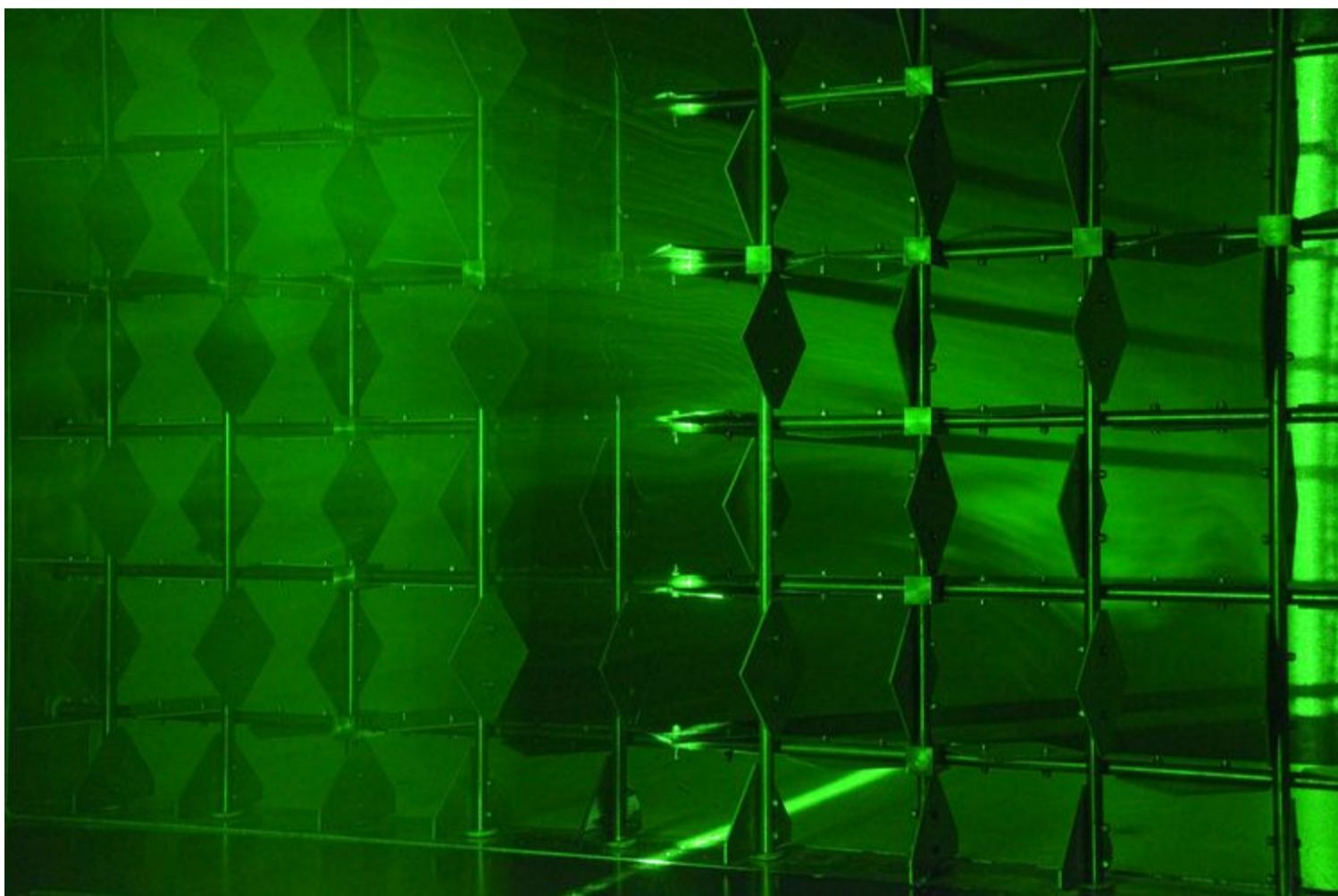
School V | Institute of Physics

Turbulence, Wind Energy and Stochastics - TWIST

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Active Grid

Generating turbulent wind fields in the large wind tunnel



With the rhombic aluminum wings of the active grid turbulent wind fields can be generated. (Photo: H. Heißelmann, ForWind)

With a special active grid, a variety of different turbulent wind fields can be generated in the large Oldenburg wind tunnel. A total of almost 1,000 rhombic aluminum wings are mounted on 80 individually controllable shafts. This allows to block limited areas of the wind tunnel nozzle and to generate turbulence. Due to the aluminum frame construction, the 3 x 3-meter grid can be easily installed and removed in the wind tunnel. The combination of an active grid with a wind tunnel of this size makes the ForWind tunnel unique. With this grid, ForWind scientists can scale down features from complex atmospheric wind fields to the dimensions of the wind tunnel, thus reproducing characteristic properties of a real wind field in the wind tunnel, such as different types of turbulent inflows, shear and wind gusts. Their aim is to better understand turbulent flows and their effects on wind turbine components. In addition, they develop and test novel control concepts to better compensate for turbulence effects.

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