

Abstract Submitted  
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**Measurement of density gradient across wind turbine interface** VIRGILIO GOMEZ, AMELIA TAYLOR, ARQUIMEDES RUIZ-COLUMBIE, SUHAS POL, CARSTEN WESTERGAARD, LUCIANO CASTILLO, Texas Tech University — The wake of a field installed model turbine was visualized using a large-scale shadowgraph apparatus. To enable a large field of view a focused shadowgraph apparatus was used where the camera lens and the light source axis were aligned. A retroreflective screen is used as a back plane to reflect the image back to the camera. Sonic anemometer measurements of velocity and temperature were obtained at points overlapping the field of view. As much as 2% change in temperature has been observed within wake, enough to cause measurable index of refraction fluctuations. Schlieren method will be used to directly measure the density gradient across the wake interface. These measurements will be used to explain the dynamics at the wake interface for different atmospheric boundary layer stability (stratification) conditions.

Amelia Taylor  
Texas Tech University

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