Scanning Lidar Spatial Calibration and Alignment Method for Wind Turbine Wake Characterization - DTU Orbit (09/08/2019)

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Sandia National Laboratories and the National Renewable Energy Laboratory conducted a field campaign at the Scaled Wind Farm Technology (SWiFT) Facility using a customized scanning lidar from the Technical University of Denmark. The results from this field campaign will support the validation of computational models to predict wake dissipation and wake trajectory offset downstream of a stand-alone wind turbine. In particular, regarding the effect of changes in the atmospheric boundary layer inflow state and turbine yaw offset. A key step in this validation process involves quantifying, and reducing, the uncertainty in the wake measurements. The present work summarizes the process that was used to calibrate the alignment of the lidar in order to reduce this source of uncertainty in the experimental data from the SWiFT field test.

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