

## HiWi Job Offer: SpinnerLidar Data Communication Protocols

The SpinnerLidar is a continuous-wave short-range lidar (light detection and ranging) measurement device, capable of measuring the wind approaching a wind turbine. Usually the lidar is installed on the nacelle or in the hub of a wind turbine, which is turned towards the wind direction. The lidar can measure wind fields at distances between 10 m and 150 m in front of the wind turbine, on a spherical measurement plane, with a sampling rate of 312 Hz for individual measurement points and 1 Hz for the full wind field, respectively.

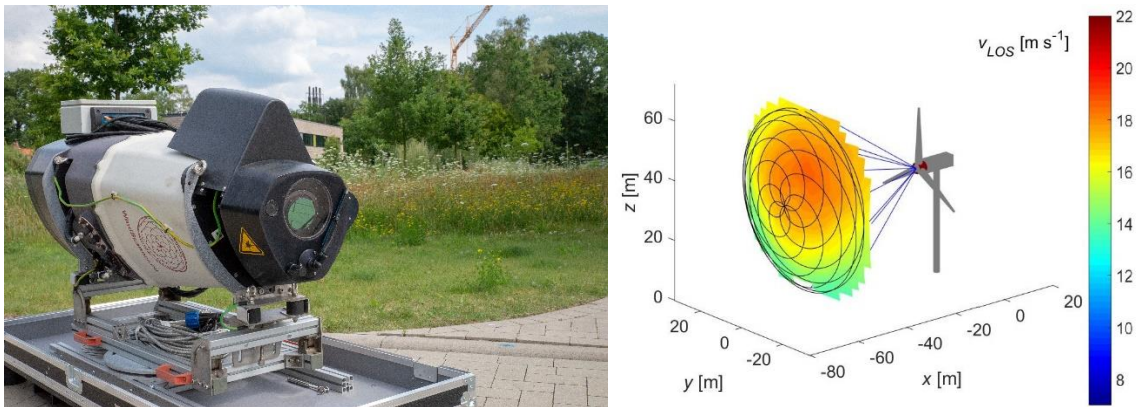


Figure 1. Left: The SpinnerLidar; Right: The SpinnerLidar measurement trajectory.

### Scope

In the scope of the DFWind research project, the SpinnerLidar will be installed first on a platform in a measurement mast and second in the hub of an Enercon wind turbine. For both measurement campaigns, data communication protocols must be developed to ensure that the SpinnerLidar is aligned correctly and that its measurement data is communicated to the right interfaces in the correct way.

### Tasks

- Supporting the development of a control algorithm for a rotating table to automatically align the SpinnerLidar with the main wind direction, based on the signal from a wind vane
- Supporting the development of a protocol that extracts SpinnerLidar data packages from a UDP signal and converts it to a PROFINET input after performing a basic wind field reconstruction

### Requirements

- B.Sc. degree in engineering, physics, informatics, or computer science
- Good knowledge of programming in Matlab or Python
- Experience with communication protocols, e.g., TCP and UDP

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| Place      | ForWind – Wind Energy Systems<br>University of Oldenburg  |
| Begin      | March 2022  |
| Duration   | Three months  |
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