Interactive comment on “Comparison of Methods to Derive Radial Wind Speed from a Continuous-Wave Coherent Lidar Doppler Spectrum” by Dominique P. Held and Jakob Mann

Anonymous Referee #1

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The paper addresses an important topic, fundamental to the growing field of wind lidar for wind energy. The paper and its conclusions are clearly presented with useful additional information in an appendix. Some suggestions for improvement are listed below.

The experimental set-up needs to be defined better: what height agl is the lidar, does the beam point up or down? The lidar must be equidistant from the masts surely, but doesn’t seem to be on fig 2 – pins in wrong locations? Where exactly is the beam waist position relative to the sonic?

There’s an assumption that lidar volume always > sonic volume, but this would reverse at short range. The sonic transducer distance is 0.175m, but with a CW lidar focused at a few m, the probe length is shorter than this.

On p8, the misalignment ambiguity is not, as suggested, related to homodyne lidar operation. It’s just a consequence of the complete absence of any info on the components perpendicular to the beam. L/R ambiguity is discussed, but what about up/down?

It would be interesting if the authors had looked at whether the 3 methods are sensitive to CNR – I would expect that to be the case. Maybe for another paper? This would help to inform decisions on optimum laser O/P for future systems.

A few minor typos require correction here and there.