

## ***Interactive comment on “A Validation and Code-to-Code Verification of FAST for a Megawatt-Scale Wind Turbine with Aeroelastically Tailored Blades” by Srinivas Guntur et al.***

### **Anonymous Referee #2**

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Dear authors and editor,

Overall the article is very interesting and well-written. The analysis of the different channels is quite detailed and the authors explain most of the observed deviations between simulations and experiments.

I don't quite understand the distinction between tables 2 and 3. How can the agreement of the different codes with experiments be better or worse in the time domain and frequency domain? Since the analysis is based on the same results, the agreement should be the same, no matter if the results are analysed in time- or frequency domain. I would suggest to combine Tables 2 and 3 in one Table showing the overall agreement

C1

or elaborate more on the different criteria applied in Tables 2 and 3.

To my opinion, a revised version of the article should include:

1) An explanation of why the rated rotor speed in the FAST simulations deviates slightly from the experimental data and the BHawC results.

2) If possible some rough details on the BHawC aerodynamic model: I guess it is BEM based and employs some kind of dynamic stall / unsteady airfoil aerodynamics model. As an example, it is stated about the structural modeling in BHawC in the article: 'In contrast to the nonlinear finite-element implementation of BeamDyn, the structural model of BHawC employs a co-rotational beam formulation, which is a combined 20 multibody and linear finite-element representation allowing for geometric nonlinearities through a series of multiple bodies, each composed of a linear finite element.' This gives some indication of the capabilities without giving away too much detail. A similar description of the aerodynamics part would be beneficial.

3) A discussion on the tower side-side bending moments. Quite some difference in the standard deviations are visible in Figure 10 at wind speeds between 15 and 19 m/s. FAST predicts much higher standard deviations, which is also visible in the PSD in Figure 21. In Table 2 this difference is not mentioned.

Please find additional comments in the annotated paper that is attached to this report.

Please also note the supplement to this comment:

<http://www.wind-energy-sci-discuss.net/wes-2016-42/wes-2016-42-RC2-supplement.pdf>

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Interactive comment on Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2016-42>, 2017.

C2