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Interactive comment on "Investigations of aerodynamic drag forces during structural blade testing using high fidelity fluid-structure interaction" *by* Christian Grinderslev et al.

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Dear Authors,

thank you for a very interesting paper. Two (plus one), very brief comments/questions for your consideration:

1. Structural Damping Role.

I could not find in the paper any mention to the role of structural damping modelling. I would guess that through the coupling with Hawc2 a Rayleigh structural damping model is included, and this would also contribute to a decay in the oscillation ampli-

tude, similarly to aerodynamic damping effects. Structural damping values are typically rather uncertain input parameters in the model, and either from simulation and measurements, it might be difficult to split the damping contribution between structural and aerodynamic sources. What are your thoughts on this, how sensitive are the simulation results to the structural damping choices, and what and how is the structural damping level chosen?

2. Effects of aerodynamics on eigen-frequency estimation.

Did you quantify any eventual bias of the blade eigen-frequency response due to the aerodynamic forces interaction? The increased aerodynamic drag might cause an increased "(aerodynamic) added mass" effect, which could potentially lower the frequency of the blade response (being now, not completely free, but subject to aerodynamic forces, higher than predicted by BEM). It could be interesting to show in the paper how much much (if any) the response frequency is shifted in the FSI response compared to the "structural-only" eigen frequency solution.

3. (very minor terminology clarification) I would guess that since the blade is non-rotating, there is actually no induction modelling active in the FSI-BEM model (correctly). Some may argue that in this case, it wouldn't be a "Blade Element Momentum" model, as 1D momentum theory and induction modeling are not used. Anyway, just a matter of naming.

Thank you for your work,

best regards.

Leonardo

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