

## ***Interactive comment on “Modern methods for investigating the stability of a pitching floating platform wind turbine” by Matthew Lennie et al.***

### **Anonymous Referee #1**

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#### General comments

The manuscript presents the results of numerical simulations of a floating wind turbine with a lifting line free vortex wake method. The overall paper fits within the journal scope. However, some shortcomings are present in the numerical results. The quality of the English text and consistency in the equations should also be improved.

#### Specific comments

- Figs 2-5: details about the numerical resolutions and methods should be given, as these results still look very coarse. - Page 4, line 3: Hasn't high-fidelity LES been performed for this case? - Page 6, line 2: The authors highlight the good agreement for all cases. However, Figs 4-5 still show large discrepancies between QBlade and the high-fidelity CFD results, both in the magnitude and phase of the forces. I would be more

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critical with the results and also give possible explanations for these discrepancies. - Page 14, line 1: remove the text in parentheses but list the potential pitfalls instead. - Page 15, line 1: Maybe it's worth running also a realistic case for further validation of the tools. - Page 17, line 3: I wouldn't say that the results are excellent (see above). Please discuss the discrepancies in more details.

#### Technical corrections

- Throughout the manuscript: in literature -> in the literature - Page 1, line 16: it's -> its - Page 1, line 16: a good method for simulating - Page 2, line 9: useful for analysing - Page 2, line 19: rephrase last sentence "profile is matched" - Page 4, line 12: comparison -> comparision - All figures: use different line styles in addition to line colours for clarity. - Figs 6 & 7: legends cannot be read. Also comment on the percentage and sources of errors. Missing axes labels. - Page 9, line 9: what are the F and G functions? - Page 9, line 19: remove the first part of the sentence. - Page 10, lines 2-4: replace by "However, the freestream velocity is taken by convention here. The unsteady features. . ." Line 5: This gives the coefficient form. . . - Page 10, onwards: Please check consistency in the symbols used in equations throughout. I noticed a lot of inconsistency, e.g. in the label for the real and imaginary parts. Also Eq (24): capital letters instead of small letters. Eq (44) missing tilde. - Page 13, line 20: a comparison - Page 14, line 11: remove use - Page 17, line 10: some confidence - Page 17, line 13: available

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