

The paper still is lacking in terms of scientific content/quality for publication and requires additional work. As it is, the paper would be OK for a conference with the emphasis more on the chain of tools that they use rather than on the actual problem solved. The mooring system is not treated and the overall problem is quite simple with out of the box tools that are interconnected. There is a good amount of prior art in this space and it is unclear that this work really moves beyond the state of the art in a substantial way. For spar optimization, also including the controller in some cases, there is some work out there that is not fully addressed by the authors. Some examples:

- Hegseth JM, Bachynski EE. 2019. A semi-analytical frequency domain model for efficient design evaluation of spar floating wind turbines. *Marine Structures*
- Dou S, Pegalajar-Jurado A, Wang S, Bredmose H, Stolpe M. 2020. Optimization of floating wind turbine support structures using frequency-domain analysis and analytical gradients. *Journal of Physics: Conference Series*
- Souza CES, Hegseth JM, Bachynski EE. 2020. Frequency-dependent aerodynamic damping and inertia in linearized dynamic analysis of floating wind turbines. *Journal of Physics: Conference Series*
- Hegseth JM, Bachynski EE, Martins JR. 2020. Integrated design optimization of spar floating wind turbines. *Marine Structures*

Please consider extending the analysis complexity and/or demonstrating more clearly how this work extends substantially beyond the state-of-the-art.

Also, there are some typos – make sure to do another proofread before resubmitting.

More detailed notes include:

- Page 8, advanced – strong adjective for simple formulation
- Page 8, by addressing... - you could get sub optimal designs, or less optimized since the optimal solutions can not be achieved with a guarantee (GA is used)
- Page 9, advanced - why advanced? seems a simple sizing problem with few variables, mooring is excluded
- Page 9, as, however, this distribution... - repetition
- Page 11, optimized advanced spar-type... - see prior comments
- Page 11, fully-coupled complex floating offshore wind turbine system – what do you mean by complex?
- Page 12, x_1 , the diameter of BCup – lot of page space – why?
- Page 12, advanced – see prior comments
- Page 13, complex optimization problem with seven design variables and 25 constraints – again, not complex
- Page 18, nsgall... - these are typically used for multi-objective optimization FYI
- Page 21, development of the design variables... the problem converges very quickly, 20 iterations is very small
- Page 22, advanced – see prior comments, need to justify this better
- Page 26, development of the objective function throughout the iterative optimization process, again, converged in 20 iterations.... what are the convergence criteria then for the opt analysis?
- Page 26, zooming into the objective - for a genetic alg it is quite a simple problem... only 7 variables and mostly linear constraints (not of system response). the challenge here is the system response evaluation done externally with a Modelica model
- Page 30, these – the results?
- Page 33, advanced – remove the use of the word advanced or quality further why it is so, the optimization itself is not demonstrably advanced compared to the state of the art

