

Wind Energ. Sci. Discuss., referee comment RC1  
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## **Comment on wes-2022-28**

Anonymous Referee #1

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Referee comment on "Methodology to predict stiffness knock-down in laminates for wind turbine blades with artificial wrinkles" by Heloisa Guedes Mendonça et al., Wind Energ. Sci. Discuss., <https://doi.org/10.5194/wes-2022-28-RC1>, 2022

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This work presents an experimental and numerical investigation into the stiffness knockdown of GFRP laminates with artificially manufactured embedded wrinkle defects. Overall, the paper is well written, easy to understand and contains valuable information. A few queries are as follows:

- 1) It appears that the experimental/computational exercise on stiffness evaluation is carried out at a stage when no global failure mode (such as delamination) has been triggered from the wrinkle. If so, can the authors please mention this fact clearly? This is important, since if the load level triggers damage, more pronounced difference in stiffness will be seen between the 'flat section' and 'wrinkle section'
- 2) The authors have mentioned that the simplified surrogate model eliminates minute geometric details of ply folds and resin pockets, while the high fidelity model captures all these details. It would be good to include images of meshed finite element models of surrogate vs high fidelity models side by side and also compare the total number of elements. Since, the results in Figure 9 indicate that the surrogate model predictions for both type of wrinkles are very close to high fidelity models, it would be interesting to know the simplified meshing pattern that still produces an accurate results. Also, can the authors compare the computational time saving while using the surrogate model vs the high fidelity model?
- 3) Although shear loading in the wrinkle section and associated hysteretic loss in the resin is experimentally measured, the model does not assume any hysteretic damping effect. Can the authors suggest how their experimental finding on hysteresis loss be included in a future model development?