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Interactive comment on "Wind turbine load dynamics in the context of turbulence intermittency" *by* Carl Michael Schwarz et al.

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The paper assesses the effect of the so called turbulence "intermittency" on the fatigue loads of the NREL 5MW wind turbine. The authors generate synthetic wind fields having identical spectral characteristics and turbulence levels by using conventional turbulent wind generators that omit intermittency effects, and their counterparts that account for turbulence intermittency. Thereafter using the above wind fields run aeroelastic simulations with the aim to characterize and compare fatigue loads of the turbine. The paper is well structured and written. The results presented are interesting although they do not always correspond to realistic wind inflow conditions. In the reviewer's opinion the paper deserves publication after some revision is made to the original text based on the comments below. 1) The main weak point of the analyses is that between

the two unrealistic extreme scenarios a) of the fully correlated and b) the uncorrelated wind fields there is no strong evidence that the intermediate field is close (in terms of spatial coherency) to the conventional wind field, against which load predictions are compared. A way to mitigate the above ambiguity is to compare spatial coherence function of the two fields like the authors do with autocorrelation function. At least this will give the picture of how realistic is the about 5% increase on the fatigue loads predicted when intermittency effect is taken into account. 2) Figure 4 presents spectral characteristics of the axial wind component. Do you get the same good agreement for the other components. Moreover, the ratios sdv_u/sdv_v and sdu/sdv_w are they also maintained? These are also important parameter that drive fatigue loads. 3) The authors compare equivalent loads of the thrust and tower bottom bending moment. The above two load sensors are pretty much correlated and therefore they do not offer any additional information the one with respect to the other. It would be preferable to compare blade flapwise moment (which corresponds to the rotating frame) and tower top yaw and tilt moment plus the thrust or tower bottom bending moment. Yawing and titling moments are much more sensitive to the incoherent nature of the inflow. 4) A global, lifetime fatigue damage estimation could be provided based on a standard Weibull or Rayleigh distribution of the wind. 5) It is recommended to extend the conclusion section by adding some qualitative discussion of the predicted change in the fatigue loads.

Additional minor comments as well as grammar/syntax corrections can be found in the accompanying pdf.

Please also note the supplement to this comment:
https://www.wind-energ-sci-discuss.net/wes-2019-24/wes-2019-24-RC2-supplement.pdf

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