

Interactive comment on “Optimal Output Feedback H_∞ Torque Control of a Wind Turbine Rotor using a Parametrically Scheduled Model” by Dana Martin et al.

Anonymous Referee #2

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This paper presents an LPV controller design for a novel rotor. The controller design procedure is explained in detail and seems to be a straightforward implementation of an existing synthesis framework. The LPV modelling step follows similar steps as the work in Bianchi. It is really hard to find the novelty of this work. The paper is rather cumbersome to read and some strange (incorrect?) statements are made:

- Abstract: “For such applications, Linear Parameter Varying (LPV) control provides a state-space approach to designing nonlinear controllers with robust performance” you also synthesis an LPV controller. Why is this a nonlinear controller?
- Abstract: “LPV uses multi-input multi-output (MIMO) model with a..” please check

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grammar (e.g Linear Parameter Varying uses . . . what does it mean?)

- Section 2, “only the portion of the sensitivities falling between the cut-in (2 m/s) and rated (5 m/s) wind speeds will be used in the construction of the parameter varying functions” a rated speed of 5 m/s sounds strange. Is that for the novel rotor? If yes, this rotor model should be introduced.

- Section 3, pg 8, line 10, “sensitivity function ($S = (I + G_p)^{-1}$) where G_p is the transfer function from the horizontal inflow wind to rotor angular velocity without any closed-loop control,..” Really strange! How can a wind speed measurement be used in a feedback loop. I really don’t understand what is going on here.

- Eq 14 with the previous S , really doesn’t make sense. I stopped reading the paper after this point. While the ACC paper from the same authors was easy to read, correct and well-organised this paper seems to be the opposite.

Other minor issues

Pg 2, line 13, “robustness of H control” what do you mean? P2 2, line 21, “a LPV” should be “an LPV” P3, quality of the figure should be improved P8, figure 4 not clear. For performance channels it doesn’t make sense to present the phase. All the figures should be checked (readability)

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