

Review of: "Backstepping Control Design in Conjunction with an EKF-based Sensorless Field-Oriented Control of an IPMSM"

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Potential competing interests: No potential competing interests to declare.

- Section 3.2, Field-Oriented Control, has already been widely studied. No need to write a lot in detail. The paper focuses on backstepping control using a sensorless method via EKF. It does not need to talk about FOC. FOC and backstepping are two very different control techniques. The cascaded control structure of backstepping and the control variables might be same, but the methods do not overlap. If possible, remove FOC from the paper.
- Figure 4 shows the speed estimation of EKF. If possible, show some error indices to verify the effectiveness of the estimation technique.
- Has the estimated speed been used in the backstepping control? There is no mention in the paper. If the paper proposes sensorless backstepping, it must provide speed tracking results with estimated speed feedback.
- Figures 5a and 5b are not necessary. The measured outputs for the EKF are the alpha-beta currents. The estimation will always be exact as measured.
- Add noise (and mention noise power/covariance) to the measured inputs and outputs of the system and verify the speed estimation. • Change the y-limits of Figure 6 and add a zoomed-in plot when the load is applied. Again, is the speed used in control estimated from the EKF?.
- Show the performance of the drive with measured and estimated speed as feedback in backstepping control.
- Will the drive be able to perform under step-varying speeds? Show results.