

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.

This manuscript presents an approach to sensorless control of Interior Permanent Magnet Synchronous Motors (IPMSMs) by combining backstepping control with an Extended Kalman Filter (EKF).

Abstract, introduction, and literature review are not presentable in the manuscript. Too many definitions, words, and details are missing the point of contribution of the manuscript. Rewrite the whole thing with a general and precise intro related to the author's contribution, then motivation, literature review, objectives, and methodology.

The introduction should more clearly articulate the novelty and specific contributions of this work compared to existing literature.

The literature review should include more recent works on sensorless control of IPMSMs.

Improve figures and tables resolution.

"The Lyapunov stability theorem is employed to guarantee the asymptotic stability condition of the backstepping controller." Is it proven by the author and verified in all operating modes and conditions?

Proofreading is required to make it more presentable to readers.

Include hardware results.

In fig. 6, speed should be in the center.

From figure 4, EKF performance still needs improvement.

Conduct a more rigorous stability analysis.

Rewrite the EKF design section to provide more details on the model selection, parameter tuning, and sensitivity analysis.

Analyze the sensitivity of the proposed method to IPMSM parameter variations.

"An important point in EKF design is the determination of covariance matrices, which is often done by trial and error." Is there no other method recommended by the author?

