

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

Xinlei Tian¹

¹ Beijing University of Aeronautics and Astronautics

Potential competing interests: No potential competing interests to declare.

This paper combines the EKF-based sensorless position detection algorithm with the Backstepping control-based speed/current controller to realize sensorless control of the IPMSM, and the effectiveness of the algorithm is verified by simulation. However, there are some issues about this manuscript that I would like to mention, such as:

1. In my opinion, the novelty of this work should be clearer or enhanced.
2. EKF has already been used for sensorless control of PMSMs, so what are the superiorities of the proposed method in this paper compared with the traditional method in control performance or other aspects? If possible, it is hoped that the performance comparison waveforms can be added to the simulation results.
3. What superiority can the backstepping-based speed/current controller bring in control performance compared with the PI controller? If possible, it is hoped that the performance comparison waveforms can be added to the simulation results.
4. According to the title, the research object of this paper is IPMSM, but the marks in Fig. 3 and the parameters in Table 2 both indicate that the research object is a surface-mounted PMSM. Therefore, please clarify which type of motor is researched in this paper.