

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.

-written in a fair to good English, with some confused formulations now and then

-introduction with lengthy literature review: the review should be more selective and consider papers with clearly related approaches

-the paper looks like a thesis memoir and should be reformatted to a more concise and objective paper format

-What exactly do you call sensorless control? You do have control laws with error feedback: how are you supposed to implement these feedback laws?

-There is an issue in the model: in eq.5, according to (4), why is the 1st equation not including the term $(L_d - L_q) \dot{i}_d \dot{i}_q$? By adding a coupling with $x_3 = i_d$, the model is no longer a chained system, and the backstepping approach is questionable!

Further details:

-(1): Variables should be defined according to previous definitions and fig.1:

> namely for vectors v_{abcs} , i_{abcs} , ψ_{abcs} ...

> L_s is not defined clearly

> θ_e does not appear in fig.1: you should define it

-after (1): The reference frames alpha-beta, d-q should be better defined, even though they are the usual ones

> Typo: θ is not a speed

-(4): Confused as a single equation, consider splitting it

> Why do you repeat the subequation $\omega_e = p \omega_m$?



> Why do you define ω as an angular frequency and not an angular speed, since it is the derivative of θ ?

-(5): Why don't you use ω_m , i_q , i_d in the state vector? It would be clearer

You should also clearly state the input vector