

# 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.

The proposed work on the article provided seemed interesting to me. However, when I became to know the requirements for reviewers by Qeios, writing a review became very difficult. There are no specified criteria that a paper should meet to be published in your publication. What is the score of the reviewer? What is the scale? Can the reviewer only accept the manuscript? These are questions to which I do not know the answers.

The structure of the paper is strange. The whole paper is 38 pages long, including: title, abstract, and introduction - 10 pages; model - 2 pages; control design - 9 pages; results - 3 pages; conclusion - 0.5 pages; and references - 8 pages. In my opinion, the first and last items are too long and need to be shortened and improved significantly. The introduction should start with synchronous brush motors, and such equations should be used when presenting the model. I think it would be advisable for the author to use the Lagrange function and the Euler-Lagrange equations of motion. In addition, the motor parameters should be identified.

The model should include the electrical circuit equations of the stator and the mechanical equations of the rotor, and the rotor equations. The rotor equations will be simplified due to the use of permanent magnets. The model of the magnets used for the motor is not shown, only the stator equations. It is not indicated which variables and parameters are vectors and which are matrices. I suggest changing the subscripts a, b, c to the numbers 1, 2, 3. The numbering of the equations should describe the individual equations and not blocks of equations.

There are no references to literature in the presentation of the mathematical model. Did the author invent all this? This may be questionable. Mathematical transformations should be presented in the paper and provide some explanation of the results.

Only the stator equations are presented, and in an unreadable way. If the motor circuit is non-linear (the inductance depends on the position of the rotor), then Clark and Park transformations should not be used. In addition, the voltage between the star centres of the phase circuits and the supply voltages should be taken into account. It is not presented how the model parameters were determined from the data in Table 2.

The transition from equations (1) to (5) should be presented in more detail. In (7), the derivative of the reference velocity is missing.

The elements of the block diagram in Figure 3 are not described. Presentations of simulation results without detailed representation of mathematical operations and models (in Matlab, Simulink), and also without practical verification, are incredible.