International Conference on Electromechanical and Energy Systems (SIELMEN)
6-8 October 2021, Iasi, Romania
pag. 203-206

Synthesis of the PID Control Algorithm for the Models of Objects with Second Order Astatism

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https://doi.org/10.1109/SIELMEN53755.2021.9600436

Abstract

In the paper is highlighted the industrial objects as cars, spacecraft, telescopes, plotters, lasers, elevators, etc., which are described by the mathematical model with double astatism. These models of control objects have a double pole in the origin of the coordinate axes. In order to tune the PID controller to the model of object with double astatism, it was elaborated the tuning algorithm based on the maximum stability degree method with iterations. It was done the computer simulation of the automatic control system with the respectively model of object and PID controller and it was done the analysis of the obtained performance. The advantages of the maximum stability degree method with iterations were highlighted by the reducing calculations and time, which lead to the procedure simplification of the PID controller tuning.

Keywords: analytical models, computational modeling, lasers , mathematical models, numerical models, astatism, transfer function, controllers, iterations

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