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PID-sliding surface based sliding mode controller for anti-lock braking system of electric vehicle (Article)

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Abstract

Anti-lock Braking System (ABS) is a crucial part in **electric vehicle**. It is an uncertain and nonlinear **system**. In this paper a **Sliding Mode Control (SMC)** technique with **PID sliding surface** is used to maintain the slip ratio, at 0.2 of **ABS system**. The mathematical representation of a quarter **vehicle** model that emphasizes essential characteristics of the whole **vehicle** was implemented in this research. The model was developed using Simulink and the proposed SMC technique was tested and validated. In addition, the **sliding mode** enforcement was ensured via stability analysis. The simulation results have shown good agreement and acceptable response of the **ABS system**. © 2016 American Scientific Publishers. All rights reserved.

Author keywords

Anti-Lock Braking System (ABS); Electric vehicle (EV); PID sliding surface; Sliding mode controller (SMC)

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