

# Fuzzy-Skyhook Control for Active Suspension Systems Applied to a Full Vehicle Model

Aref M.A. Soliman<sup>1,\*</sup>, Mina M.S. Kaldas<sup>2</sup>, David C. Barton<sup>3</sup> and Peter C. Brooks<sup>3</sup>

<sup>1</sup>Department of Mechanical Engineering, South Valley University, Egypt.

<sup>2</sup>Institute of Automotive Engineering, TU Braunschweig, Germany.

<sup>3</sup>Institute School of mechanical Engineering, Leeds University, Leeds, UK.

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## Abstract

Nowadays, most modern vehicles are equipped with controlled suspension systems for improving the vehicle ride comfort. Therefore, this paper is concerned with a theoretical study for the ride comfort performance of the vehicle. The theoretical investigation includes a suggestion of an active suspension system controller using fuzzy-skyhook control theory, which offers new opportunities for the improvement of vehicle ride performance. The ride comfort of the active suspension system has been evaluated using a 7 degree of freedom full vehicle mathematical model. The simulation results are presented in the time and frequency domain, also in terms of RMS values, and it's shown that the proposed active suspension system with fuzzy-skyhook control improved the vehicle ride quality in terms of body acceleration, suspension working space and dynamic tyre load in comparison with the passive and skyhook suspension systems.

**Keywords:** Active suspensions, fuzzy control, skyhook control, fuzzy-skyhook control, full vehicle model, ride comfort

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\* Corresponding author. E-mail address: arefsoliman@gmail.com

Tel.: +2-01005859571; Fax: +2(096)5211279

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