

Title: Wheel slip control based on composite nonlinear feedback

Author/Authors: Ahmad Mudzakkir Ahmad Mustafa, Hairi Zamzuri, Mohd. Hatta Mohammed Ariff, Muhammad Afandi Mohamad Nordin, Saiful Amri Mazlan

Abstract: To produce faster vehicle acceleration and avoid wheelspin on slippery roads, the wheel slip must be controlled to achieve maximum traction. Recent researches in slip control always had to compromise between speed of time response and overshooting. This research studies the application of Composite Nonlinear Feedback (CNF) controller for vehicle wheel slip control, particularly for in-wheel electric vehicle. A strategy for applying the CNF controller which involves feedback linearization is proposed. The CNF is a combination of a linear feedback law and a nonlinear feedback law without any switching element. The CNF control focuses on improving the transient performance. The proposed control strategy is validated by simulation.