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Sliding Mode Based Analysis and Identification of Vehicle Dynamics

By Hocine Imine

Springer-Verlag Gmbh Jul 2011, 2011. Taschenbuch. Book Condition: Neu. 237x156x14 mm. Neuware - Vehicles are complex mechanical systems with strong nonlinear characteristics and which can present some uncertainties due to their dynamic parameters such as masses, inertias, suspension springs, tires side slip coefficients, etc. A vehicle is composed of many parts, namely the unsprung mass, the sprung mass, the suspension which makes the link between these two masses and therefore ensures passenger comfort, and also the pneumatic which absorbs the energy coming from the road and ensures contact between the vehicle and the road. In addition to its complexity and the presence of many nonlinearities and uncertainties, the presence of some external perturbations, such as the wind and the road inputs with its own characteristics (radius of curvature, longitudinal and lateral slop, road profile and skid resistance) can cause risks not only to the vehicle but also to passengers and other road users. Many methods have been developed in order to understand the behavior of a vehicle (light and heavy vehicle), control it and assist the driver in order to avoid possible lane departures, rollover or jackknifing risks, to ensure a better passenger comfort by means of a suspension...



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