

線控轉向系統動態分析之研究

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摘要

本文主要是在建立線控轉向系統動態模型，並根據所建立之動態模型，分析車輛轉向時，線控轉向系統對車輛轉向行為之影響；在不同路面摩擦係數下，分析線控轉向系統車輛動態的穩定性，並使用Carsim軟體去模擬車輛的動態。線控轉向系統是由馬達取代傳統轉向柱，當車輛轉彎時所需要的力都是由馬達提供；此時輪胎胎壓的變化、溫度的改變或是道路路面有不規則的顛簸時會使車輛轉向不穩定。輪胎中心與側向力的距離 tp (pneumatic trail)，也就是當車輛轉向時，輪胎的變形量和是跟上述條件有密切關係的參數；車速(v)和路面摩擦係數(μ)是跟轉向有關；本研究利用靈敏度方程式(Sensitivity Equations)，來分析 v 、 tp 和 μ 對線控轉向系統車輛動態的側滑角(Slip angle)、偏擺角(Yaw rate)、輪胎轉向角(Steering angle)和輪胎轉向角速度(Steering angle rate)的影響；並模擬 v 、 tp 和 μ ，在相同百分比的變化量下，對線控轉向系統車輛動態的影響。

關鍵詞：線控轉向系統；靈敏度方程式

目錄

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