Disturbance Response Decoupling and Achievable Performance with Application to Vehicle Active Suspension

Fu-Cheng Wang and Malcolm C. Smith

Abstract

This paper derives a structural condition on the controller for a given (stable) plant which guarantees that some prespecified closed-loop transfer function is the same as in the open loop. We also present conditions to test whether the achievable dynamic response of other transmission paths remains effectively the same if the controller is so restricted. The results are applied to simple quarter- and half-car vehicle models, and illustrated numerically for a double-wishbone half-car model.