

¹ THE RECOVERY OF THE OPTIMAL DAMPING CONSTANT BY THE MRF DAMPER

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Abstract

What is studied in this paper is a method used in order to analyze the recovery of the optimal damping constant because of the temperature increasing in a shock absorber. The increase of a temperature leads to the decrease of that constant by means of such dynamic viscosity to modify the dynamic behavior of a 2DOF system built up by the sprung and unsprung mass.

The Magnetorheological damper was designed in accordance with the design of the desired optimal damping constant with the once fixed temperature. It has been seen that this constant is lost with the increase of a temperature. As Magnetorheological Fluids allow us to increase the viscosity, we use a control signal by a state feedback of a reduced order to create such a magnetic induction field to recover the optimal damping constant at higher temperature than to design one.

Key words: Index Terms — Optimal Damping Constant, Magnetorheological Fluid, State Feedback, Semi-Active Suspension.

OBNAVLJANJE OPTIMALNE PRIGUŠNE KONSTANTE POMOĆU MRF AMORTIZERA

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Rezime: U ovom radu je analizirano obnavljanje optimalne prigušne konstante usled porasta temperature u amortizeru. Porast temperature dovodi do smanjenja ove konstante pošto dinamička viskoznost utiče na promenu dinamičkog ponašanja 2DOF sistema oscilujućih masa.

Magnetorheological amortizer je projektovan u skladu sa optimalnom prigušnom konstantom pri konstantnoj temperaturi. Uočeno je da se sa porastom temperature prigušna

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konstanta smanjuje. Pošto Magnetorheological Fludi pružaju tu mogućnost da se viskozitet poveća, koristi se kontrolni signal koji daje informaciju o stepenu smanjenja kako bi moglo da se formira polje magnetne indukcije koje bi obnovilo optimalnu prigušnu konstantu pri temperaturama višim od onih pri projektovanju.

Ključne reči: Optimalna prigušna konstanta, Magnetorheological Fludi, odziv stanja, polu-aktivno vešanje.