

# <sup>1</sup>VEHICLE STEERING CONTROL

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## **Abstract**

In this paper, the problem of vehicle unstable motion related to desired path is considered. A model to study vehicle lateral dynamics with respect to steering control is developed. Three possibilities to solution of vehicle directional instability are analysed, as follows, driver steering control, optimal controller application, combined control - as driver steering action supported by a technical controller. But, only optimal controller application is further focused in this paper. In this sense a procedure to design a vehicle steering controller based on the optimal control theory is proposed. For input data a passenger car middle class the structure and parameters of optimal controller are determined. Then, simulation researches are conducted and some results of controlled vehicle behaviour by acting specified disturbance are presented and discussed.

**Key words:** vehicle, instability, driver, controller, simulation.

## **KONTROLA UPRAVLJANJA VOZILA**

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**Rezime:** U radu je razmotren problem nestabilnog kretanja vozila u odnosu na željenu putanju. Razvijen je model za proučavanje bočne dinamike vozila sa aspekta kontrole upravljanja. Analizirane su tri mogućnosti za rešavanje problema nestabilnosti pravca vozila i to, uz pomoć vozača, zatim uvođenjem optimalnog regulatora, i konačno kombinovanom kontrolom – dejstvo vozača podržano tehničkim regulatorom. U radu je dalje, razmotrena samo primena optimalnog regulatora. U tom smislu, predložena je procedura za projektovanje optimalnog regulatora bazirana na teoriji optimalnog upravljanja. Za ulazne podatke putničkog automobila srednje klase određeni su struktura i parametri optimalnog regulatora. Zatim su sprovedena simulaciona istraživanja i neki rezultati upravljanja ponašanjem vozila pri dejstvu specificiranih poremećaja su priloženi i diskutovani.

**Ključne reči:** vozilo, nestabilnost, vozač, regulator, simulacija.

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