Worst Case Analysis of the Attitude Control System for the Long Coasting Phase of a Launcher Upper Stage

This paper presents a novel control law based on dynamic inversion for the attitude control of a long coasting upper stage of a launcher. The resulting closed loop control system is then analysed using two methods: an optimisation based worst case analysis and a cross entropy based probability profile study. The uncertain parameters constitute both epistemic uncertainties and the launcher configuration parameters, and the performance criterion under study is the total number of actuations.