

Thrust Vector Control Validation Results for Performance and Stability Robustness Assessments

Industrial Thrust Vector Control requirements for the VEGA launcher are presented. It is shown how current stability robustness is met using classical margin analyses. Performance robustness is demonstrated using Monte Carlo simulations on high fidelity flight test validated non-linear simulators that include complex dynamics of all its components including the effects of the environments. The traditional validation and verification strategies are presented in the face potential improvements. A comparative analysis is given synthesizing the main Validation and Verification improvements provided by novel techniques provided by the companion papers.