



Robust Controller Design for Active Flutter Suppression of a Two-dimensional Airfoil

Chunyan Gao*, Guangren Duan and Canghua Jiang

*Center for Control Theory and Guidance Technology, Harbin Institute of Technology,
P.O.Box 416, Harbin 150001, PRC*

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Abstract: This paper investigates the problem of active flutter suppression for a two-dimensional three degrees of freedom (3DOF) airfoil. With the influence of unsteady aerodynamic forces and parametric uncertainties, the output suboptimal control law design for a 3DOF airfoil control system is transformed into a constrained optimization problem. Then, the flutter robust suppression control law could be expediently obtained by linear matrix inequalities (LMIs), which realizes active flutter suppression by increasing the flutter critical speed. Simulation results show that the flutter phenomenon could be well suppressed in spite of the uncertainty of damping coefficients.

Keywords: *active flutter suppression; suboptimal control; linear matrix inequalities.*

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