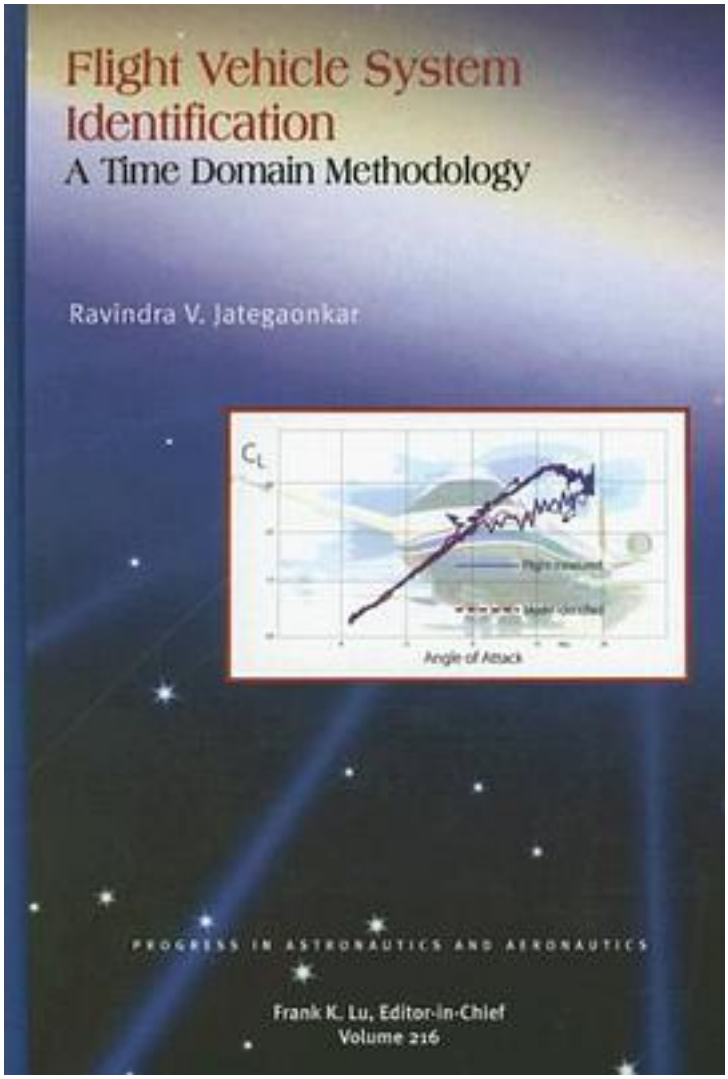
Flight Vehicle System Identification



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出版时间:2006-8

装帧:HRD

isbn:9781563478369

This valuable volume offers a systematic approach to flight vehicle system

identification and covers exhaustively the time-domain methodology. It addresses in detail the theoretical and practical aspects of various parameter estimation methods, including those in the stochastic framework and focusing on nonlinear models, cost functions, optimization methods, and residual analysis. A pragmatic and balanced account of pros and cons in each case are provided. It also presents data gathering, model validation and covers both large scale systems and high fidelity modeling. Real world problems dealing with a variety of flight vehicle applications are addressed and solutions are provided. Examples encompass such problems as estimation of aerodynamics, stability, and control derivatives from flight data, flight path reconstruction, nonlinearities in control surface effectiveness, stall hysteresis, unstable aircraft, and other critical considerations. Beginners, as well as practicing researchers, engineers, and working professionals who wish to refresh or broaden their knowledge of flight vehicle system identification will find this book highly beneficial. Based on years of experience, the book also provides recommendations for overcoming problems likely to be faced in developing complex nonlinear and high fidelity models and can help the novice negotiate the challenges of developing highly accurate mathematical models and aerodynamic databases from experimental flight data. Software that runs under MATLAB[registered] and sample flight data are provided to assist the reader in reworking the examples presented in the text. The software can also be adapted to the reader's own interests.

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