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## Aeroelastic Model Structure Computation for Envelope Expansion (Paperback)

By National Aeronautics and Space Adm Nasa

Independently Published, United States, 2019. Paperback. Condition: New. Language: English. Brand new Book. Structure detection is a procedure for selecting a subset of candidate terms, from a full model description, that best describes the observed output. This is a necessary procedure to compute an efficient system description which may afford greater insight into the functionality of the system or a simpler controller design. Structure computation as a tool for black-box modeling may be of critical importance in the development of robust, parsimonious models for the flight-test community. Moreover, this approach may lead to efficient strategies for rapid envelope expansion that may save significant development time and costs. In this study, a least absolute shrinkage and selection operator (LASSO) technique is investigated for computing efficient model descriptions of non-linear aeroelastic systems. The LASSO minimises the residual sum of squares with the addition of an  $l_1$  penalty term on the parameter vector of the traditional  $l_2$  minimisation problem. Its use for structure detection is a natural extension of this constrained minimisation approach to pseudo-linear regression problems which produces some model parameters that are exactly zero and, therefore, yields a parsimonious system description. Applicability of this technique for model structure computation...



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