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“Robust Analysis, Reliability and Test Correlation of Aeronautical Structures using HyperStudy”

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Abstract:

Many disciplines of the aeronautic industry are optimised in order to build aircraft with lower cost, of construction and use, than before. The aeronautical structure is one of them, with the main objective to find the strongest structure with a minimal weight.

The finite element method, coupled to optimisation, leads to an optimum. But this numerical optimum is meaningless if the structure behaviour modelled does not match with tests. Moreover, an optimisation of finite element model can be defined by many parameters and responses. The difficulty is then to sort these parameters and to reduce their number to the more influents on responses. A robust analysis underlines these major parameters.

HyperStudy allows leading a complete optimisation problem, from the robust analyses to the optimisation itself. This methodology helps engineers to match their finite element model to tests results.

Keywords:

- Robust Analysis
- Optimization
- Finite Element Model