Contribution ID: **6**   Type: **not specified**

Data Fusion Surrogate Modeling on Incomplete Factorial Design of Experiments

Friday 19 February 2016 10:00 (40 minutes)

This work concerns a construction of surrogate models for a specific aerodynamic data base. This data base is generally available from wind tunnel testing or from CFD aerodynamic simulations and contains aerodynamic coefficients for different flight conditions and configurations (such as Mach number, angle-of-attack, vehicle configuration angle) encountered over different space vehicles mission. The main peculiarity of aerodynamic data base is a specific design of experiment which is a union of grids of low and high fidelity data with considerably different sizes. Universal algorithms can't approximate accurately such significantly non-uniform data. In this work a fast and accurate algorithm was developed which takes into account different fidelity of the data and special design of experiments

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Session Classification: Data Science Applications