



NASA SBIR 2017 Phase I Solicitation

A1.10 Hypersonic Technology-Improvement in Solar Operability Predictions using Computational Algorithms

Lead Center: LaRC

Participating Center(s): GRC

Technology Area: TA15 Aeronautics

The improvement of isolator operability (as defined by unstart) and performance prediction are of import to a practical dual-mode scramjet design, since the operability limits determine the optimal performance bounds of the system. Due to uncertainties in these bounds, which are typically obtained via computations and/or experiments (and extrapolated to flight environments), one must accept degraded system performance. To this end, this solicitation seeks innovative concepts to significantly advance the state-of-the-art in the predictive capability of computational algorithms, with the ultimate goal of incorporating these advances into RANS-CFD algorithms, in order to both reduce and quantify the margins and uncertainty of the coupled inlet-isolator-combustor (engine) unstart mechanism/process, applicable to relevant flight regimes and relevant dual-mode scramjet designs.