NASA SBIR 2012 Phase I Solicitation

A3.02  Quiet Performance

Lead Center: LaRC

Innovative technologies and methods are necessary for the design and development of efficient, environmentally acceptable aircraft. In support of the Fundamental Aeronautics Program, improvements in noise prediction, measurement methods and control are needed for subsonic, transonic and supersonic vehicles targeted specifically at airframe noise sources and the interaction of airframe and engine noise. Innovations in the following specific areas are solicited:

- Fundamental and applied computational fluid dynamics techniques for aeroacoustic analysis, which can be adapted for design codes.
- Prediction of aerodynamic noise sources including those from airframe and sources which arise from significant interactions between airframe and propulsion systems.
- Prediction of sound propagation from the aircraft through a complex atmosphere to the ground. This should include interaction between noise sources and the airframe and its flow field.
- Innovative source identification techniques for airframe (e.g., landing gear, high lift systems) noise sources, including turbulence details related to flow-induced noise typical of separated flow regions, vortices, shear layers, etc.
- Concepts for active and passive control of aeroacoustic noise sources for conventional and advanced aircraft configurations, including adaptive flow control technologies, and noise control technology and methods that are enabled by advanced aircraft configurations, including integrated airframe-propulsion control methodologies.
- Development of synthesis and auditory display technologies for subjective assessments of aircraft community and interior noise, including sonic boom.