

Opportunity Title: Propulsion Aeroelasticity and Structural Dynamics

Opportunity Reference Code: 0009-NPP-NOV23-GRC-AeroEng

Organization National Aeronautics and Space Administration (NASA)

Reference Code 0009-NPP-NOV23-GRC-AeroEng

Application Deadline 11/1/2023 6:00:59 PM Eastern Time Zone

Description Opportunity is Restricted to U.S. Citizens Only

An analytical and experimental research program in aeroelasticity and structural dynamics of turbomachines is being conducted in order to understand the basic mechanisms involved in flutter, forced response, vibration, and control of vibration. Our objective is to apply the results directly to current and future-generation turbomachines and their components in order to improve their aeroelastic characteristics, and their performance and design. Current research includes development of models and computer codes to predict flutter, forced response, nonlinear vibrations, and passive and active vibration control in turbomachinery components of propulsion systems. The analytical models account for variations in blade properties (mistuning), nonlinear frictional contacts, and complex unsteady flowfields based on computational fluid dynamics so that the models are applicable to fan, compressor and turbine blades of advanced propulsion systems.

Vibration and aeroelastic experiments are conducted to guide the development of analytical models, to verify them, and to check the designs. Experimental research includes measurements of steady-state and unsteady blade deflections and stresses, vibration frequencies, structural damping, flutter, and forced response. We are interested in analytical and experimental research to control vibrations, reduce vibratory stresses, improve operability and increase fatigue life of turbomachinery blades. Passive and active damping concepts are being investigated.

Location:

Glenn Research Center
Cleveland, Ohio

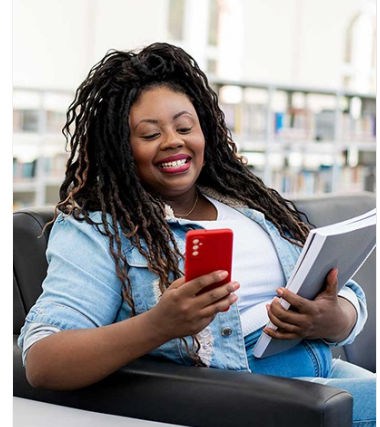
Field of Science: Aeronautics, Aeronautical or Other Engineering

Advisors:

Milind Bakhle
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Eligibility Requirements

- **Citizenship:** U.S. Citizen Only
- **Degree:** Doctoral Degree.



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