

AEROSPACE ENGINEERING

Friday
Nov 3, 2017
2:00 P.M.

*Gold
Auditorium,
Bioscience
Center*



SAN DIEGO STATE
UNIVERSITY

Aerospace Engineering
College of Engineering

5500 Campanile Drive
Mail Code 1308
San Diego, CA 92182

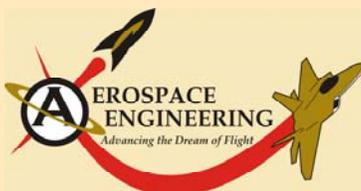
Phone: 619 594 6067

Webpage:

<http://aerospace.sdsu.edu>

Facebook:

[SDSUAerospaceEngineering](#)



Body Freedom Flutter Demonstrator

Jeff Beranek

Lockheed Martin Skunk Works

Low tail volume aircraft exhibit coupling of rigid body vehicle motion and flexible vehicle dynamics that can result in undesirable behaviors ranging from poor flying qualities to Body Freedom Flutter (BFF). For low tail volume aircraft, this is the coupling of the short period with symmetric wing first bending. Historically, this phenomenon has been mitigated



through increased stiffness (added weight), configuration changes, and/or flight envelope modifications. Development of solutions has often taken place with expensive aeroelastic wind tunnel models. An alternate approach is a Remotely Piloted Vehicle (RPV) to emulate full size aircraft behavior in a low cost risk reduction program. *This presentation discusses the BFF phenomenon along with the development and flight test of an RPV demonstrator.* The desire is to excite students in the possibilities that can be achieved with relatively low cost materials and systems for demonstrating real life phenomena.

Speaker Biography:



Mr. Beranek is a Lockheed Martin Fellow in Flutter and Aeroelasticity at Lockheed Martin Aeronautics Company – Palmdale (The Skunk Works). Mr. Beranek's current function is to develop solutions to aeroelastic challenges and to mentor developing engineers in aeroelasticity. Jeff has 36 years of experience in flutter and aeroservoelasticity in the Skunk Works. He graduated from Iowa State University in 1981 with a B.S. in Aerospace Engineering. He has worked on 30+ air vehicles; most notable are the YF-12A, SR-71, U-2, F-117A, F-22, DarkStar, JASSM, X-35, and X-56A. He is a Lockheed Martin Fellow in Flutter and Aeroelasticity, an Associate Fellow of the American Institute of Aeronautics and Astronautics, and a member of the Aerospace Flutter and Dynamics Council. Jeff actively mentors a number of engineers in multiple disciplines and teaches classes in aeroelasticity at LM Aero. Jeff has also authored a number of papers in the area of body freedom flutter. Jeff is an avid photographer and supporter of the National Parks.

Host: Dr. Luciano Demasi