CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES

COLLOQUIUM

Friday, March 23
3:00 – 4:00 PM
Maria Sanford, Room 101
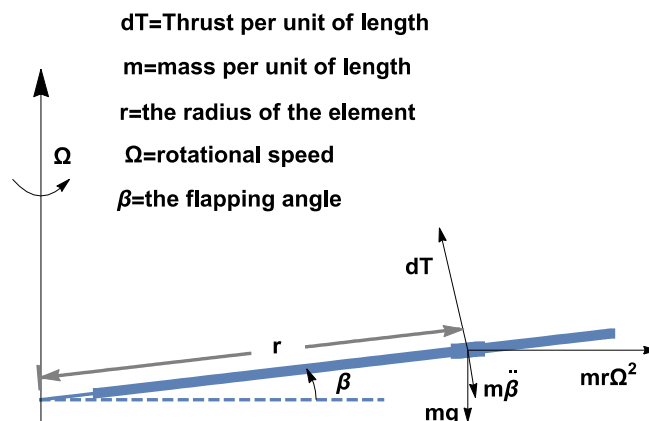
ON THE FLAPPING MOTION
OF A HELICOPTER BLADE

OSCAR PERDOMO

CENTRAL CONNECTICUT STATE UNIVERSITY

(Joint work with Fu-Shang (John) Wei)

Abstract: In this talk we will explain one way to model the flapping motion $\beta(t)$ of a helicopter blade using an inhomogeneous linear differential equation with periodic coefficients. Then, we will compare two methods that compute the Fourier coefficients of this motion. The computation of these Fourier coefficients, also called flapping harmonics, is important to gain a better understanding on how to achieve a better blade design.

dT=Thrust per unit of length

m=mass per unit of length

r=the radius of the element

Ω=rotational speed

β=the flapping angle