直昇機複材葉片耦合系統動態響應分析

In this research, the rotating composite blade behavior will be analyzed by the mode shapes, and the wake induced flow effects will be studied by the aeroelastic system's dynamic response. The coupled system includes the wake induced flow, linear part of ONERA dynamic stall model and non-autonomous nonlinear composite rotor blade flap-lag-torsion model. The mode shape of a composite blade will be solved analytically. The Jordan canonical form and matrix skills are used for obtaining composite blades mode shapes. The Galerkin's method is employed for numerical approach of the dynamic response. The results discover that the bending-torsion stiffness for a composite blade dominates the utilizable property for a rotating blade. The wake induced flow effects play an important role in higher pitch angles in hover, even for a composite rotor.