

where

$$A_\eta \phi_\eta(\xi) = R_\eta(\xi) + jI_\eta(\xi)$$

If the beam is subjected to an external force of the form $G_1(\xi) \cdot G_2(\theta)$, the response is then obtained as

$$\eta(\xi, \theta) = 2 \sum_{\eta} R_{\eta}'(\xi) \int_0^{\theta} \exp -\nu_{\eta}(\theta - \tau) \cdot \cos(\omega_{\eta}(\theta - \tau)) \cdot G_2(\tau) d\tau - I_{\eta}'(\xi) \int_0^{\theta} e^{-\nu_{\eta}(\theta - \tau)} \cdot \sin(\omega_{\eta}(\theta - \tau)) \cdot G_2(\tau) d\tau \quad (14)$$

where

$$\frac{\phi_{\eta}(\xi) u_{\eta}}{Q_{\eta}} = R_{\eta}'(\xi) + jI_{\eta}'(\xi); \quad u_{\eta} = \int_0^1 G_1(\xi) \phi_{\eta}(\xi) d\xi$$

Example

An aircraft for the analysis of landing impact is idealized as in Fig. 1, where the wing is considered to be a beam, M_1 is the fuselage mass, M_2 and M_3 are the engine masses and K and C are landing gear stiffness and damping. This is a more realistic model as compared to the one treated by Stowell et al.⁶ While writing Eq. (1) for this system ξ_1 is taken equal to $(0 + \epsilon)$.^{1,2} The boundary conditions are

$\phi'(0) = \phi'''(0) = \phi''(1) = \phi'''(1) = 0$, and the initial conditions are $\eta_0(\xi) = 0$, $g_0(\xi) = V_0$, the dimensionless velocity of descent.

The frequency equation was solved by Newton-Raphson method, and the frequencies for a particular case are shown in Fig. 2. Fuselage motion following landing are plotted in Fig. 3 for different positions of the engine mass. The relation of this response with that of the corresponding rigid body system is a measure of the effect of interaction of wing flexibility with the landing gear forces.

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Errata

Analytical Method for Combining the Interaction of Inlet Distortion and Turbulence

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FIGURE 3 displaying dynamic airfoil data from the experiments of Carta is incorrectly labeled. The upper curve is for high frequency $\omega c/V = 0.60$ and the lower curve is for low frequency $\omega c/V = 0.15$. The author is grateful to one of the reviewers for pointing out this error before publication and to F. O. Carta for pointing it out after publication.

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Graded Thermal Barrier—A New Approach for Turbine Engine Cooling

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IN Table 1, Median Test Results, of the original paper, the entry for graded coating-0.030 Ni-Cr-Mo/ZrO₂ should have a 100+ in the column for Burner Liner Thermal Shock. This specimen did not fail in 100 shocks.

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