The gain matrix is almost identical to the gain matrix obtained by analytical method, and the preceding gain matrix is approximately diagonal. Errors introduced by the approximation method (Ritz method) upon the mode shape, natural frequencies, and gain matrix are less than 1%.

Conclusions

In this study we have presented a methodology for uniform modal damping of plates with certain boundary conditions. The sensor actuator pairs are placed at the intersection of the nodes of the $(M+1)$ and $(N+1)$ mode. The method shows the following: 1) all modes are damped uniformly; 2) the open-loop and closed-loop frequencies are the same; and 3) the mode shapes are invariant. This methodology has been shown to work in all cases where the nodal lines intersect. If one were to examine the total number of simple boundary conditions (clamped, SS, free) for rectangular plates, one would find that there are 21 different combinations. The UDNC method works for all combinations except the following: C-F-S-F, C-F-C-F, S-F-S-F, C-F-F-F, S-F-F-F, F-F-F-F. In these cases there are no intersections of the nodal lines. A general solution for these cases remains elusive.

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Errata

H_∞ Feedback for Attitude Control of Liquid-Filled Spacecraft

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THE first sentence in the last paragraph of the second column on page 50 should read as follows:

"The control law $u_x = -(a\omega_x + b\beta_x)$, $u_y = -(a\omega_y + b\beta_y)$, $u_z = -(a\omega_z + b\beta_z)$ was proposed by Mortensen,[15] who proved that the closed-loop system for a rigid spacecraft without external disturbances is globally and asymptotically stable."

The statement on page 51 following Eq. (101) should read as follows:

"where $u_x = -(a\omega_x + b\beta_x)$, $u_y = -(a\omega_y + b\beta_y)$, and $u_z = -(a\omega_z + b\beta_z)$, in which the coefficients a and b are defined according to the polynomial equations (83) and (84) together with inequality (44)."

AIAA regrets the error.