Professor James A. Stricklin (1932 – 1976)

Selected Publications:

J.A. Stricklin, D.R. Navaratna and T.H.H. Pian, “Improvements on the analysis of shells of revolution by the matrix displacement method”, AIAA Journal, Vol. 4, No. 11, November 1966, pp. 2069-2072

W.E. Haisler and J.A. Stricklin, “Rigid-body displacements of curved elements in the analysis of shells by the matrix-displacement method”, AIAA Journal, Vol. 5, No. 8, August 1967, pp. 1525-1527

J. A. Stricklin, W. E. Haisler, H. R. MacDougall and F. J. Stebbins, “Nonlinear analysis of shells of revolution by the matrix displacement method”, AIAA Paper no. 67-177, January 1968

James A. Stricklin, Jose C. DeAndrade, Frederick J. Stebbins and Anthony J. Cwiertny (Department of Aerospace Engineering, Texas A and M University, College Station, Texas, USA), “Linear and Nonlinear Analysis of Shells of Revolution with Asymmetrical Stiffness Properties”, AFFDL-TR-68-150, October 1968, DTIC Accession Number: ADA446937, Handle / proxy Url : http://handle.dtic.mil/100.2/ADA446937
ABSTRACT: In this paper, the authors apply an extension of the direct stiffness method of structural analysis to the linear and nonlinear analysis of shells of revolution under arbitrary static loading with variable thickness properties in the circumferential direction and the meridional direction. The primary difference between this research and previously published research is that all the Fourier harmonics in the circumferential direction are now coupled. The thickness variation in the circumferential direction yields an 8N x 8N element stiffness matrix in which N is the number of harmonics. The resulting computer program is used to conduct a linear, nonlinear, and stability analysis of the Apollo aft heat shield.

Stricklin, J. A. and Martinez, J.E. Dynamic buckling of clamped spherical caps under step pressure loadings. A.I.A.A. J. 7 (6), (1969)1212-1213.

J.A. Stricklin, et al., “A rapidly converging triangular plate element”, AIAA Journal, Vol. 7, 1969, pp.180-181

Stricklin, J. A., Martinez, J. E., Tillerson, J. R., Hong, J. H., Haisler, W. E., "Nonlinear Dynamic Analysis of Shells of Revolution by Matrix Displacement Method," N 70-30153, Texas A and M University, College Station, Texas, February, 1970.

James A. Stricklin and Walter E. Haisler (Aerospace Engineering Department, Texas A&M University, College Station, TX 77843, U.S.A.), **“Formulations and solution procedures for nonlinear structural analysis”**, Computers & Structures, Vol. 7, No. 1, February 1977, pp. 125-136, doi:10.1016/0045-7949(77)90067-0
ABSTRACT: This paper presents a survey of the formulations and solution procedures for nonlinear static and dynamic structural analysis. The formulations covered include the pseudo force method, the total Lagrangian method, the updated Lagrangian method, and the convected coordinate method. The relationship of each principle to the basic principle of virtual work is presented. For static analysis, the solution by direct minimization of the total potential, Newton-Raphson and modified Newton-Raphson, and the first and second order self correcting method are reviewed and put in proper perspective. It is concluded that the most efficient methods for static problems are the modified Newton-Raphson and the first order self correcting methods. For

dynamic nonlinear analysis, a new method based on modal analysis using the pseudo force method is presented. Numerical results for the highly nonlinear dynamic response of a shallow cap (lambda = 6) under a step load at the apex shows the method to be 5 times faster than the Houbolt solution procedure. Other methods surveyed include the Newmark beta method, the Wilson method, central differences, and the stiffly stable solution procedure of Park.