Professor Emeritus Nelson Robert Bauld, Jr.

See:
http://www.clemson.edu/ces/me/people/emeritus/index.html

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Selected Publications:

Nuri Akkas and Nelson R. Bauld, Jr. (Department of Engineering Mechanics, Clemson University, Clemson, South Carolina, USA), "Buckling and Post-Buckling of Spherical Caps", ASCE Journal of the Engineering Mechanics Division, Vol. 97, No. 3, May/June 1971, pp. 727-739
ABSTRACT: The results of a numerical study of the buckling and initial post-buckling behavior of clamped shallow spherical shells under axisymmetric band type loads are presented. This behavior is studied, first, for a cap with fixed geometry when the radial location of a band load of constant width is allowed to vary; second, for a cap with fixed geometry under a uniform pressure distributed over the outer region of the cap; and third, for a band load of constant width and radial location when the shell geometry is allowed to vary. It is found in each of these studies that, for a significant range of the geometric shell parameter, lambda, the spherical cap under axisymmetric band load is imperfection-sensitive.

Nelson R. Bauld, Jr. (Clemson University, Clemson, South Carolina 29631, U.S.A.), "Imperfection sensitivity of axially compressed stringer reinforced cylindrical sandwich panels", International Journal of Solids and Structures, Vol. 10, No. 8, August 1974, pp. 883-902, doi:10.1016/0020-7683(74)90031-6
ABSTRACT: This paper presents some numerical results of the effects of several nondimensional parameters on the buckling and initial post buckling behaviors of shallow sandwich panels under axial compression. Results are presented that show these effects due to transverse shearing resistance of the core material, different face-sheet thicknesses, and different core thicknesses. Further effects on the buckling and initial postbuckling behaviors of sandwich panels are presented due to the torsional resistance of longitudinal edge stiffeners. The

results show that the range of flatness parameter, _¥/d, for which sandwich panels remain imperfection-insensitive increases with increases in transverse shearing resistance of the core material and with larger core thicknesses. These results also indicate that this range of _¥/d is smallest when the face-sheet thicknesses are equal. Finally, as in the case of homogeneous panels, torsional resistance of the longitudinal edge stiffeners has the effect of making the sandwich panel less imperfection-sensitive.

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“An automated, energy-based, finite-difference procedure for the elastic collapse of rectangular plates and panels”, Computers & Structures, Vol. 11, No. 3, March 1980, pp. 239-249,
doi:10.1016/0045-7949(80)90164-9
ABSTRACT: A FORTRAN IV, large capacity, computer program has been developed to determine collapse loads and bifurcation loads for linear and nonlinear prebuckling behavior for fiber-reinforced, laminated, rectangular plates and panels under general loading systems and boundary conditions. The program is based on the principle of total potential energy and uses finite-differences in the discretization process. Whole-station spacing has been used to calculate the strain energy associated with an area-element and an orthogonal finite-difference grid that provides for variable spacings in perpendicular directions is incorporated. Numerical results are presented that compare favorably with results obtained via the general computer program STAGS. Other numerical results are presented that illustrate the types of boundary conditions, applied loads, cut-outs and initial geometric imperfections that can be handled by the present program. A brief study of the effect of panel construction and initial geometric imperfections on the buckling behavior of fiber-reinforced panels is presented.

N. R. Bauld, Jr. and N. S. Khot, A numerical and experimental investigation of the buckling behavior of composite panels, Computers and Structures, 15 (1982) pp. 393-403.

N. S. Khot and N. R. Bauld, Jr., Further comparison of the numerical and experimental buckling behaviors of composite panels, Computers and Structures, 17, (1983) pp. 61-68.