

## **Professor N. Yamaki**

### **Selected Publications:**

Yamaki, N. \_\_1959\_\_. “Postbuckling behaviour of rectangular plates with small initial curvature loaded in edge compression.” ASME Trans. J. Appl. Mech., 26, 407–414.

Yamaki, N. \_\_1960\_\_. “Postbuckling behaviour of rectangular plates with small initial curvature loaded in edge compression-\_\_continued\_\_.” ASME Trans. J. Appl. Mech., 27, 335–342.

Yamaki, N., "Buckling of Circular Cylindrical Shells under External Pressure", Reports of the Inst. of High Speed Mechanics, THOKU University, Vol. 20, pp. 35-55, 1968/1969.

Yamaki, N., "Influence of Prebuckling Deformations on the Buckling of Circular Cylindrical Shells Under External Pressure", AIAA J., Vol. 7, No. 4, pp. 753-755, April 1969.

Yamaki, N. and Tani, J., “Buckling of Truncated Conical Shells under Torsion”, Zeitschrift für Angewandte Mathematik and Mechanik, 49, 471-480, 1969.

N. Yamaki. Buckling of circular cylindrical shells under external pressure. Reports of the Institute of High Speed Mechanics, 20:35–55, 1969.

N. Yamaki. Influence of prebuckling deformation on the buckling of circular cylindrical shells under external pressure. Reports of the Institute of High Speed Mechanics, 21:81–104, 1970.

Tani, J., and Yamaki, N., "Buckling of Truncated Conical Shells under Axial Compression" AIAA J. Vol. 8, No. 3, pp. 568-571, March 1970.

N. Yamaki, “Influence of prebuckling deformations on the buckling of circular cylindrical shells under external pressure (Prebuckling deformations influence on circular cylindrical shell buckling under external pressure, applying Galerkin method to Donnell equations)”, Tohoku University, Institute Of High Speed Mechanics, Reports. Vol. 21, pp. 81-104. 1970

N. Yamaki, et al, “Buckling of circular cylindrical shells under compression, Report 3”, The reports of the Institute of High Speed Mechanics, ..., 1972

N. Yamaki and J. Tani, “Postbuckling Behaviour of Circular Cylindrical Shells under Hydrostatic Pressure”, ZAMM - Journal of Applied Mathematics and Mechanics / Zeitschrift für Angewandte Mathematik und Mechanik, Vol. 54, No. 10, 1974, pp. 709–714, doi: 10.1002/zamm.19740541006

ABSTRACT: Applying the Galerkin procedure to the Donnell basic equations, solutions of exact nature are obtained for the postbuckling behavior of circular cylindrical shells under hydrostatic pressure. Through detailed calculations, connections of the edge shortening, deflection and volume change with applied pressure are clarified for a wide range of shell geometries. The results here obtained are ascertained to be in good agreement with experimental results.

N. Yamaki, Experiments on the post-buckling behaviour of circular cylindrical shells under torsion, in: B. Budiansky (Ed.), Buckling of Structures, IUTAM Symposium, June 1974, Cambridge, USA, Applied Mathematics and Mechanics, Springer, Berlin, 1976.

N. Yamaki, K. Otomo and K. Matsuda, "Experiments on the postbuckling behavior of circular cylindrical shells under compression" (Precise experimental results are presented clarifying the whole aspect of the postbuckling behavior of circular cylindrical shells under compression for a wide range of shell geometries), *Experimental Mechanics*, Vol. 15, No. 1, 1975, pp. 23-28, doi: 10.1007/BF02318521

ABSTRACT: Detailed experimental studies are performed on the postbuckling behavior of circular cylindrical shells under compression, by using polyester test cylinders with the geometric parameter  $Z$  ranging from 20 to 1000. In each case, variations of the equilibrium load, circumferential wave number and maximum inward and outward deflections, with applied edge shortenings, are clarified. Contour lines for typical postbuckling configurations are also shown. It is found that, as the cylinder is compressed beyond the primary buckling, secondary bucklings take place successively with diminishing wave numbers, and that postbuckling equilibrium loads become significantly lower than those at buckling as  $Z$  increases. Further, for short shells with  $Z$  less than or equal to 100, the buckled waveforms are always symmetric with one-tier diamond buckles, while for longer shells, asymmetric postbuckling patterns with two tiers of buckles dominate.

N. Yamaki and S. Kodama (Institute of High Speed Mechanics, Tohoku University, Sendai, Japan), "Postbuckling behavior of circular cylindrical shells under compression", *International Journal of Non-Linear Mechanics*, Vol. 11, No. 2, 1976, pp. 99-111, doi:10.1016/0020-7462(76)90008-1

ABSTRACT: Applying the Galerkin procedure to the Donnell basic equations, reasonably accurate solutions are obtained for the postbuckling behavior of clamped circular cylindrical shells under axial compression. To make a distinct comparison with the previous experimental results, calculations are carried out for shells with the same elastic and geometric parameters and the relations between the waveform, axial shortening and maximum deflections with applied loads are clarified. The results here obtained are found to be in reasonable agreement with experimental ones throughout the regions with fairly large deformations.

Yamaki, N., "Postbuckling and imperfection sensitivity of circular cylindrical shells under compression", In: Koiter WT, editor. *Theoretical and applied mechanics*. North-Holland Publishing Company, (1976), 461-487.

K. Nagai and N. Yamaki, Dynamic stability of circular cylindrical shells under periodic compressive forces, *J. Sound and Vibration* 58(3) (1978) 425-41.

Yamaki, N. and Mori, A., 1980, "Non-linear vibrations of a clamped beam with initial deflection and initial axial displacement, Part I: Theory," *Journal of Sound and Vibration* 71, pp. 333-346.

**Elastic stability of circular cylindrical shells**, by Noboru Yamaki, North-Holland, 1984, 558 pages, ISBN 0444868577, 9780444868572