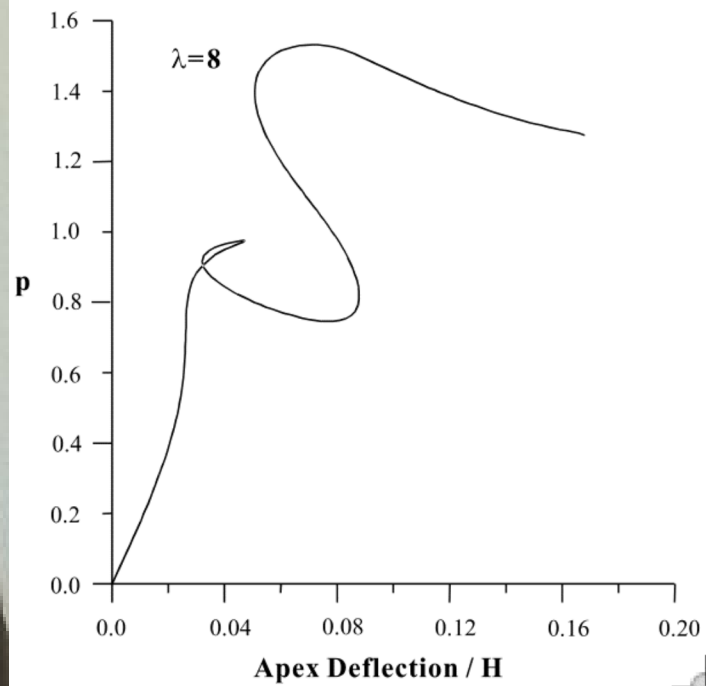**Professor Emeritus Gerald A. Wempner**

Normalized nonlinear load-deflection curve for a shallow cap apex that can be determined via a Wempner-Riks method (from Akkas and Odeh, 2001)

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Selected Publications:

Gerald A. Wempner, J. Tinsley Oden and Dennis A. Kross, **"Finite-element analysis of thin shells"**, ASCE J. Eng. Mech. Div., Vol. 94, No. EM6, December 1968, pp. 1273-1294

G.A. Wempner, **"Finite elements, finite rotations and small strains of flexible shells"**, Int. Journal of Solids and Structures, Vol 5, 1969, pp. 117-153

Wempner, G.A., "Discrete approximations related to nonlinear theories of solids", Int. J. Solids and Structures, Vol. 7, 1971, pp. 1581-1599.

T.J. Boedecker and G.A. Wempner, "Large deformations of a toroidal membrane by incremental loading, Proc. IASS Conference, Calgary, Canada, 1972, pp. 181-191

G. Wempner, **Mechanics of Solids**. 1973, McGraw-Hill, New York

Wempner, G.A.: **Mechanics of Solids, with Applications to thin Bodies**, Springer, 656 pages, 1982

G. Wempner, A general theory of shells and the complementary potentials, J. Appl. Mech. 53 (1986) 881-885.

Wempner, Gerald. **"Mechanics and Finite Elements of Shells"**, Applied Mechanics Reviews, 42: No. 5, pp.129-142, (May 1989).

Gerald A. Wempner (School of Civil Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA), **"Shells: Mechanics and approximation – linear and nonlinear aspects"**, in Computational mechanics in structural engineering: recent developments and future trends, edited by Franklin Y. Cheng and Fu Zizhi, 1992, Elsevier Science Publishers Ltd, ISBN 1-85166-867-5
ABSTRACT: The following paper focuses on the special attributes of shells, various mechanical peculiarities and related problems. The presentation addresses theories and approximations which are applicable to thin and thick shells, geometrical nonlinearities and inelastic deformations. Attention is given to the origins of particular phenomena, to viewpoints and methods which appeal to basic concepts of mechanics.

Gerald Wempner and Demosthenes Talaslidis, **Mechanics of Solids and Shells: Theories and Approximations**, 2002, CRC Press, Taylor & Francis Group
Description: As the theories and methods have evolved over the years, the mechanics of solid bodies has become unduly fragmented. Most books focus on specific aspects, such as the theories of elasticity or plasticity, the theories of shells, or the mechanics of materials. While a narrow focus serves immediate purposes, much is achieved by establishing the common foundations and providing a unified perspective of the discipline as a whole. Mechanics of Solids and Shells accomplishes these objectives. By emphasizing the underlying assumptions and the approximations that lead to the mathematical formulations, it offers a practical, unified presentation of the foundations of the mechanics of solids, the behavior of deformable bodies and thin shells, and the properties of finite elements. The initial chapters present the fundamental kinematics, dynamics, energetics, and behavior of materials that build the foundation for all of the subsequent developments. These are presented in full generality without the usual restrictions on the deformation. The general principles of work and energy form the basis for the consistent theories of shells and the approximations by finite elements. The final chapter views the latter as a means of approximation and builds a bridge between the mechanics of the continuum and the discrete assembly. Expressly written for engineers, Mechanics of Solids and Shells forms a reliable source for the tools of analysis and approximation. Its constructive presentation clearly reveals the origins, assumptions, and limitations of the methods described and provides a firm, practical basis for the use of those methods.