



Professor Loc Vu-Quoc

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Biography:

Loc Vu-Quoc received the Diplôme d'Ingénieur in Structural Engineering with Highest Honors (Avec Les Félicitations du Jury) from the Institut National des Science Appliquées, Lyon, France, in 1979. After a brief stint (Summer 78, Summer 79) at Engineering Systems International (ESI), Rungis, France, he joined the Centre Technique des Industries Mécaniques (CETIM), Senlis, France for two years (1979-81), and worked on the development of a finite element code for use in the French nuclear engineering program and in other small to medium mechanical industries. In 1982, he received a M.S. degree in Structural Mechanics from the Illinois Institute of Technology, Chicago then at the University of California at Berkeley, he was conferred in 1985 a M.S. degree in Electrical Engineering and Computer Science and in 1986 a Ph.D. degree in Structural Engineering and Structural Mechanics. After two years of postdoctoral work at Stanford and Berkeley, he joined the University of Florida in 1988, and is currently Professor of Mechanical and Aerospace Engineering. In 1990, he received the NSF Presidential Young Investigator award. His current research interests are in applied/computational electromagnetics/mechanics, and in power electronics simulation. In 1996, Dr. Vu-Quoc

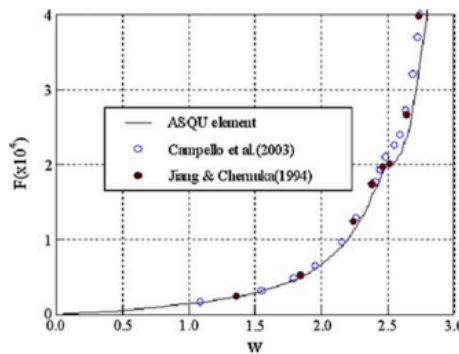


Fig. 8 Load-deflection curve at Point A of open cylindrical shell

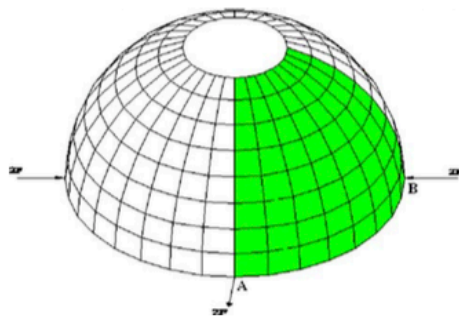


Fig. 9 Pinched hemispherical shell with an 18°-hole

From: Z. X. Li, B. A. Izzuddin and L. Vu-Quoc, "A 9-node co-rotational quadrilateral shell element", Computational Mechanics, Vol. 42, No. 6, 2008, pp. 873-884

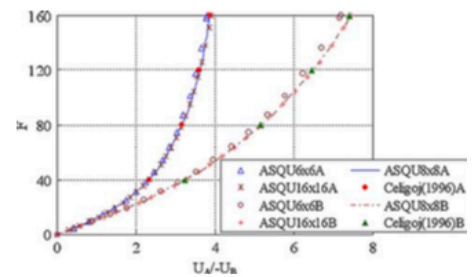


Fig. 10 Load-deflection curves of a pinched hemispherical shell ($h = 0.04$)

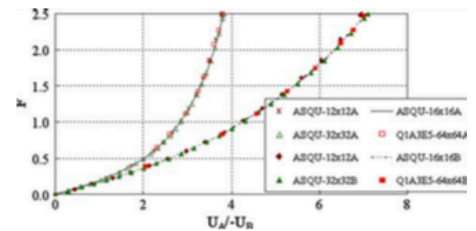


Fig. 11 Load-deflection curves of a pinched hemispherical shell ($h = 0.01$)

The results calculated respectively by using 6×6 , 8×8 and 16×16 ASQU elements and 16×16 9-node Lagrang shell elements [34] are presented in Fig. 10. A nearly converged solution can be achieved when 8×8 ASQU element

was bestowed with a Teaching Improvement Program Award for excellence in teaching both undergraduate and graduate courses.

Research Interests:

Fracture mechanics; Composite materials; Computational electromagnetic; Solid-shell formulation; Finite elements; Meshfree/particle methods; Dynamics of flexible structures; Optimization; Control

Selected Publications:

- Simo JC, Vu-Quoc L. A three-dimensional finite strain rod model, Part II: computational aspects. *Computer Methods Appl.Mech.Engrg.*, 58: 79-116 (1986)
- Simo, J. C., and Vu-Quoc, L. On the dynamics of flexible beams under large overall motion - the plane case: Part i. *Journal of Applied Mechanics* 53 (1986), 849–854.
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- J. C. Simo & L. Vu-Quoc [1986c] The role of Nonlinear Theories in Transient Dynamic Analysis of Flexible Structures, *J. Sound and Vibration*, (To appear).
- Simo, J.C.; Vu-Quoc, L. (1988): On the dynamics in space of rods undergoing large motions: a geometrically exact approach. *Comp. Meth. Appl. Mech. Eng.*, 66, 125-161.
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- J. Simo, L. Vu-Quoc, “A geometrically-exact rod model incorporating shear and torsion-warping deformation”, *International Journal of Solids and Structures*, 27 (3) (1991), pp. 371-393
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- X. G. Tan, L. Vu-Quoc, Optimal solid shell element for large deformable composite structures with piezoelectric layers and active vibration control, *International Journal for Numerical Methods in Engineering*, 64 (2005), 1981-2013.
- X. G. Tan and L. Vu-Quoc, Efficient and accurate multi-layer solid-shell element: non-linear materials at finite strain, *Int. J. Numer. Methods Engrg.* 63 (2005) 2124-2170.
- Z. X. Li, B. A. Izzuddin and L. Vu-Quoc, “A 9-node co-rotational quadrilateral shell element”, *Computational Mechanics*, Vol. 42, No. 6, 2008, pp. 873-884
- Z.X. Li and L. Vu-Quoc, “A mixed co-rotational 3D beam element formulation for arbitrarily large rotations”,

Advanced Steel Construction, Vol. 6, No. 2, pp 767-787 (2010)

Li, Z. X., Liu, Y. F., Izzuddin, B. A. and Vu-Quoc, L., “A stabilized co-rotational curved quadrilateral composite shell element”, International Journal for Numerical Methods in Engineering, Vol. 86, No. 8, May 2011, pp. 975–999

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Z.X. Li, T. Zheng, L. Vu-Quoc and B.A. Izzuddin, “A 4-node co-rotational quadrilateral composite shell element”, International Journal of Structural Stability and Dynamics, Vol. 16, No. 9, 1550053, November 2016