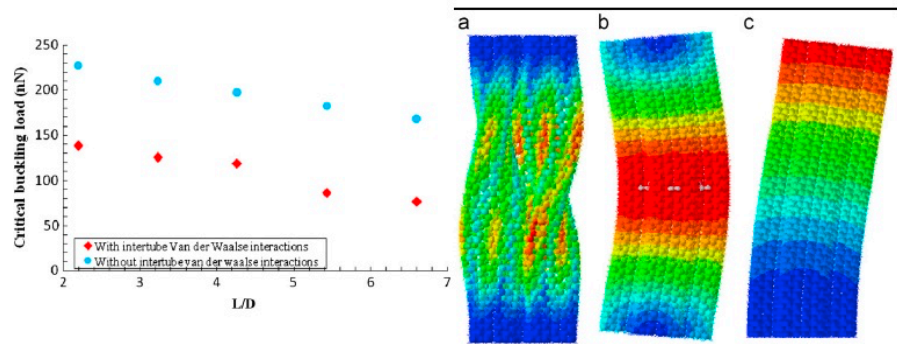# Professor Mahmoud Shariati

"Buckling analysis of carbon nanotube bundles under axial compressive, bending and torsional loadings via a structural mechanics model", by Zadeh, Shariati, et al, Journal of Physics and Chemistry of Solids, in press

Academic Qualification: Ph.D., Mechanical Engineering
Field of Study: Fracture Mechanics
University: Tarbiat Moddares University
Academic Rank: Full Professor
Research Interests: Fracture Mechanics, Stress analysis and Design in structures
Professional & Scientific Membership: Member of the President board of Shahrood university of technology, Member of the council of Shahrood university of technology, Vice President of the council of Shahrood university of technology, President and member of the council of Research and Technology of Shahrood university of technology, President and Member of the council of Education of Shahrood university of technology, President and Member of the council of High education of Shahrood university of technology, ISME (Iranian Society of Mechanical Engineering), Manager and Member of Editorial Board of journal of Sciences and Technology of Shahrood university of technology, Chief editor of journal of "Solid and Fluid Mechanics" of shahrood university of technology
Awards & Patents: Design and manufacturing of a pilot tube microtunnelling machine-2006-Iran, Design and manufacturing of a steering pilot tube system for microtunnelling process-2007-Iran

Biographical Sketch:

Dr. Mahmoud Shariati is currently with the department of mechanical engineering at the Shahrood University of Technology. He holds Ph.D. in Mechanical Engineering from Tarbiat Moddares University at 1998. He has been focused his studies on fracture mechanics and fatigue and design & stress analysis of structures since 1998. Dr. Shariati is a member of the Iranian Society of Mechanical Engineering (ISME). He has published more than 100 journal and conference papers, and supervised more than 20 graduate dissertations, as well. He has educated different subjects in general area of Mechanical Engineering including, Strength of materials, Statics, Dynamics, Machine elements design, composite material, Engineering mathematics, Continuum mechanics, Advanced Engineering mathematics, Theory of elasticity, Theory of plasticity, Fracture mechanics and fatigue, Finite element method.

Selected Publications:

Mahmoud Shariati and Masoud Mahdizadeh Rokhi (Department of Mechanical Engineering, Shahrood University of Technology, Daneshgah Boulevard, Shahrood, Iran), "Numerical and experimental investigations on buckling of steel cylindrical shells with elliptical cutout subject to axial compression", Thin-Walled Structures, Vol. 46, No. 11, November 2008, pp. 1251-1261, doi:10.1016/j.tws.2008.02.005

ABSTRACT: The effect of cutouts on load-bearing capacity and buckling behavior of cylindrical shells is an essential consideration in their design. In this paper, simulation and analysis of thin steel cylindrical shells of various lengths and diameters with elliptical cutouts have been studied using the finite element method and the effect of cutout position and the length-to-diameter (L/D) and diameter-to-thickness (D/t) ratios on the buckling and post-buckling behavior of cylindrical shells has been investigated. For several specimens, buckling test was performed using an INSTRON 8802 servo hydraulic machine and the results of experimental tests were compared to numerical results. A very good correlation was observed between numerical simulation and experimental results. Finally, based on the experimental and numerical results, formulas are presented for finding the buckling load of these structures.

M. Shariati, M. Sedighi, J. Saemi, H.R. Eipakchi, H.R. Allahbakhsh, (Shahroud University of Technology, Shahroud, Iran, "Numerical and experimental investigation on ultimate strength of cracked cylindrical shells subjected to combined loading", ISSN pp. 1392 - 1207. MECHANIKA. 2010. No. 4 (84)

ABSTRACT: Shell structures have been widely used in pipelines, aerospace and marine structures, large dams, shell roofs, liquid-retaining structures and cooling towers [1]. Buckling is one of the main failure considerations when designing these structures [2]. At first, researchers focused on the determination of the buckling load in the linear elastic zone, but experimental studies showed that the buckling capacity of thin cylindrical shells is much lower than the amount determined in the classic theories [3, 4]. Shell structures, like other types of structures, are usually susceptible to various types of defects and damages such as initiation and propagation of cracks, corrosion, chemical attack and time-dependent material degradation, which impair their structural soundness. The presence of cracks in a shell structure can play the role of geometrical imperfection and thus reduce the load carrying capacity of the shell structure [5-7]….

M. Shariati and H.R. Allahbakhsh (Mechanical Department, Shahrood University of Technology, Shahrood, Iran), "Numerical and experimental investigations on the buckling of steel semi-spherical shells under various loadings", Thin-Walled Structures, Vol. 48, No. 8, August 2010, pp. 620-628, doi:10.1016/j.tws.2010.03.002

ABSTRACT: In this paper, the buckling and post-buckling of steel thin-walled semi-spherical shells are investigated under different loadings, both experimentally and numerically. Various vertical compression loadings are applied to specimens using the following methods: a rigid flat plate and some rigid bars with circular, square and spherical cross sections, a rigid tube, a plate with a hole, and an indented tube. The effects of geometrical parameters of specimens on the buckling load, such as the diameter and thickness, are studied. The numerical analysis is carried out by ABAQUS software and the experimental tests are performed using an Instron 8802 servo-hydraulic machine. The numerical and experimental results are similar to one another. Therefore, the numerical results are valid.

M. Shariati, J. Saemi, M. Sedighi and H. R. Eipakchi, "Experimental and numerical studies on buckling and post-buckling behavior of cylindrical panels subjected to compressive axial load", Strength of Materials, Vol. 43, No. 2, 2011, pp. 190-200, doi: 10.1007/s11223-011-9285-x

ABSTRACT: The effects of the length, sector angle, and different boundary conditions on the buckling load and post buckling behavior of cylindrical panels have been investigated using experimental and numerical methods. The experimental tests have been performed using a servo-hydraulic machine, Instron 8808, and for numerical analysis, Abaqus finite element package has been used. The numerical results are in good agreement

with the experimental tests.

M. Shariati, M. Sedighi, J. Saemi and A. K. Poorfar (Mechanical Engineering Faculty, Shahrood University of Technology, Shahrood, Iran; Email: msedighi47@gmail.com), "Numerical Analysis and Experimental Study of Buckling Behavior of Steel Cylindrical Panels", Steel Research International, Vol. 82, No. 3, March 2011, pp. 202–212, doi: 10.1002/srin.201000071
ABSTRACT: The effects of the length, sector angle and different boundary conditions on the buckling load and post buckling behavior of cylindrical panels have been investigated using experimental and numerical methods. The experimental tests have been performed using a servo hydraulic machine and for numerical analysis, Abaqus finite element package has been used. The numerical results are in good agreement with the experimental tests.

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"Investigation on Buckling Behavior of Tubular Shells with Circular Cutout, Subjected to Combined Loading", Research Journal of Recent Sciences, Vol. 1, No. 7, pp. 68-76, July 2012
ABSTRACT: Within this contribution, buckling of tubular steel shells with circular cutout will be analyzed. The experimental results will be compared by FEM simulation results within circular cutouts of the specimen. The experimental buckling tests have been conducted using a Servo-hydraulic machine (Instron 8802). Considering the broad application range of tubular thin-walled shells, prediction of the behavior of these elements in combined loading case (especially for buckling behavior) has gained a great level of importance. In this study, the influence of shell length, shell diameter, shell angle and diameter of circular cutouts on the predicted buckling values for the tubular shell has been explored. Numerical simulations of tubular shell subjected to combined loading were conducted. The analytical solutions show excellent agreement with the numerical results predicted by FEM.

Hamidreza Allahbakhsh and Mahmoud Shariati, "Buckling of cracked laminated composite cylindrical shells subjected to combined loading", Appl Compos Mater, 2012, DOI: 10.1007/s10443-012-9300-9
ABSTRACT: A series of finite element analyses on the cracked composite cylindrical shells under combined loading is carried out to study the effect of loading condition, crack size and orientation on the buckling behavior of laminated composite cylindrical shells. The interaction buckling curves of cracked laminated composite cylinders subjected to different combinations of axial compression, bending, internal pressure and external pressure are obtained, using the finite element method. Results show that the internal pressure increases the critical buckling load of the CFRP cylindrical shells and bending and external pressure decrease it. Numerical analyses show that axial crack as the most detrimental effect on the buckling load of a cylindrical shell, and results show tht for lower values of the axial compressive load and higher values of the external pressure, the buckling is usually in the global mode, and for higher values of axial compressive load and lower levels of external pressure the buckling model is mostly in the local mode.