Professor Emeritus Roderick C. Tennyson,

D. Hui, R. C. Tennyson and J. S. Hansen, "Mode Interaction of Axially Stiffened Cylindrical Shells: Effects of Stringer Axial Stiffness, Torsional Rigidity and Eccentricity," J. Applied Mech, Vol. 48, Trans. ASME, 1981.

See:
http://209.15.218.133/~isiscan/archived-isiscanada/contact/bios/tennyson.html
http://orlabs.oclc.org/identities/lccn-n96-119286/
http://www.barnesandnoble.com/c/roderick-c.-tennyson
http://www.thenile.com.au/books/Roderick-C-Tennyson/
http://patents.justia.com/inventor/RODERICKCTENNYSON.html
http://www.wikipatents.com/as/s_inventor/Tennyson%3B+Roderick+C.

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A University of Toronto PhD in aerospace materials and structures, Dr. Tennyson became a full professor at U of T in 1974, and subsequently served as Chair of the Division of Engineering Science. Later be was appointed Director of the University of Toronto Institute of Aerospace Studies (UTIAS) for two terms from 1985 – 1995. In 1996, he was the founding Director of the University of Toronto's Government Research Infrastructure

Program (GRIP) office which played a critical role in securing over $400 million dollars in grants and contracts awarded to premiere researchers across the whole spectrum of the university over a four-year period.

Dr. Tennyson was a Founding Member of the International Space University (ISU) headquartered in Strasbourg, France, and President of the Canadian Foundation for ISU (CFISU) from its inception in 1987 to 2001. Tennyson has also served as a consultant to the Federal Government when it created the Ministry of State for Science and Technology, and as member of the first Canadian Defence Science Advisory Board. He has been a Board member of the Canadian Institute for Aerospace Research and the federal Centre of Excellence, "Intelligent Structures for Innovative Systems". He also served as a Board member on the Ontario provincial Centre of Excellence, the "Institute for Space and Terrestrial Science".
His career as a research scientist in aerospace engineering spans 40 years, and he has published over 200 technical papers in subjects ranging from the design and testing of aerospace structures to the design of new fiber optic sensor systems.

His research on shell structures began with the publication of his doctoral thesis in 1965 in which he presented a patented manufacturing process for fabricating geometrically near-perfect circular cylinders. His subsequent tests on axial compression showed that the classical buckling load could be achieved within about 10% of the classical buckling load prediction, which had never been achieved before by any experimenter. High speed photography was employed to record the buckling process and analysis of the photoelastic stress patterns showed the classical "square wave" solution applied. These results were published in the open literature prior to any analysis on the effect of edge boundary conditions. It was later proven that a clamped end constraint, which applied to Tennyson's test models, did indeed contribute to about a 10% reduction in the classical buckling load. When Koiter's imperfection theory became known to shell bucking researchers, Tennyson was able to modify his fabrication process to construct circular cylinders with controlled axisymmetric imperfections of varying amplitude and wavelength. His compression tests proved Koiter's theory was correct, and by expanding Koiter's model to account for varying wavelengths, Tennyson published a complete paper demonstrating the role of axisymmetric imperfections of different amplitudes and wavelengths on reducing the classical buckling load (again taking into account the clamped end condition). Later research focused on the effect of a local dimple imperfection and random axisymmetric imperfections, using a PSD approach to predict buckling load reductions. All of these tests were conducted on homogeneous isotropic cylinders. As composite materials emerged for fabricating light-weight aerospace structures, Tennyson obtained a number of US air force cylinder models and performed compression buckling tests on these graphite epoxy cylinders of different layups. Imperfection profiles were measured to predict buckling load reductions. In this case, Tennyson and his researchers developed the equivalent of Koiter's theory for composite laminated cylinders, as well as for sandwich construction. Tennyson's work also included the study of oval cylinders, with and without imperfections, and the role of circular cut outs on reducing axial buckling loads. Dynamic axial buckling load tests were also conducted on circular cylinders and again high-speed photography was employed to record the buckling process and critical loads. All of this work can be found in the open literature in both journal and book chapter publications.

His most notable research in the past 20 years has involved studying space environmental effects on materials, with experiments on the US Space Shuttle and the NASA LDEF .satellite. He developed one of the few atomic oxygen (AO) test facilities in North America at that time, and was able to produce an erosion nomogram to predict the material loss of polymers used in space structures based on material properties, exposure to AO in orbit, and inclination relative to the velocity vector of the space craft. Later, Tennyson and his researchers developed a patented protective surface treatment for polymers that minimized AO erosion in space, which has been used in several applications.

Combined with his work on AO, Tennyson instituted a test program to study the impact damage from micrometeoroids and orbital debris (MOD) to composite laminates using the NASA Johnson gas gun test facility. This research has led to numerous publications demonstrating the effect of mass, size, angle of impact and energy on the extent of damage to both flat plate and cylindrical structures. He subsequently developed a technique for detecting impact damage on space structures using optical fibers woven into a fabric such as Kevlar. Tests at JSC proved the method worked in providing information on both the location and size of the damage caused by MOD impacts.

Tennyson is the coauthor of six patents dealing with protective coatings for spacecraft, and fiber optic sensor systems. He is a Fellow of the Canadian Aeronautics and Space Institute (CASI), and his work has been recognized with several awards: Turnbull Lecturer by CASI for significant achievements in aerospace engineering; in 1998; the Canadian Society of Mechanical Engineers recognized him with the Duggan medal for his contributions to advanced materials; in 2004, CASI honoured him with their McCurdy Award for outstanding achievement in aerospace science and engineering. He also received an award in 2005 from the Canadian Government's Department of Natural Resources for his "exceptional contribution to the development of a novel remote monitoring system (using fiber optic sensors on pipelines)." In 2010, he received an innovation award from NASA for his patented design for a fiber optic impact detection system for spacecraft.

As a contribution to educating aspiring young faculty or would be academics, he called on his years of experience in multiple roles in a university environment and in April 2011, he coauthored a book entitled "So you want to be a Professor? How to succeed in Academia." (www.amazon.com).

He is currently a Professor Emeritus at the University of Toronto Institute for Aerospace Studies and his interests now include solving the water crisis in the Sahel region of Africa. Consequently, he has formed a team of international experts to address this urgent problem and welcomes any reader who might have a similar interest to contact him (rctennyson@aol.com). Information on the "Trans Africa Pipeline" (TAP) project can be found on our web site: www.transafricapipeline.org.

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