



**Professor Emeritus Eric R. Johnson**

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<http://www.aoe.vt.edu/people/emeritus/erjohns4.html>

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Department of Aerospace and Ocean Engineering  
Virginia Polytechnic Institute and State University

**Education:**

Ph.D., 1976, Applied Mechanics and Engineering Science, University of Michigan

M.S.E., 1972, Engineering Mechanics, University of Michigan

B.S.E., 1968, Mechanical Engineering, University of Michigan

**Professional History:**

1994-present, Professor, 1986-1994, Associate Professor, 1981-1986, Assistant Professor of Aerospace and Ocean Engineering, Virginia Polytechnic Institute and State University; Graduate Research Assistant and Teaching Assistant in Applied Mechanics and Engineering Science, the University of Michigan; 1968-1973, Research Engineer, Analytic Laboratory, Research and Development Department, Sperry Rand Corporation.

**Research Interests:**

Research in the mechanics of the response and failure of advanced composite material structures with applications to flight, marine, and land vehicles. Specific expertise in buckling and postbuckling of plates and shells, and progressive failure analyses and energy absorption. Examples of current projects include: the progressive failure analysis of tape and textile composite structures using decohesion finite elements to model crack initiation and propagation, nonlinear response and failure of bonded joints, and nonlinear finite element analysis and design studies of ribbed, conical shells made of high impact polystyrene.

**Selected Publications:**

Johnson, E. R. and Plaut, R. H., 1980, "Load-frequency relationships for shallow elastic arches," Virginia Polytechnic Institute and State University, Blacksburg, VA, Rpt. VPI-E-80-4.

Nemeth, M. P., Johnson, E. R., Stein, M. and Kamat, M. P. (1983) Buckling Behavior of Orthotropic Composite Plates with Centrally Located Cutouts. Report VPI-E-83-21, Virginia Polytechnic Institute and State University, June.

Johnson, E. R., Hyer, M. W., and Carper, D. M., "Response of Composite Material Shallow Arch to Concentrated Load", Proceedings of the AIAA/ASME/ASCE/AHS 25th Structures, Structural Dynamics, and Materials Conference, Palm Springs, CA, 1984, pp. 310-321.

Nemeth, M. P., Stein, M. and Johnson, E. R. (1986) An Approximate Buckling Analysis for Rectangular Orthotropic Plates with Centrally Located Cutouts. NASA TP-2528.

Bonanni, D.L., Johnson, E.R., Starnes, J.H., "Local Crippling of Thin-Walled Graphite-Epoxy Stiffeners", AIAA paper 88-2251, 1988

Curry, J. M., Johnson, E. R. and Starnes Jr., J. H., "Effect of Dropped Plies on the Strength of Graphite-epoxy Laminates", AIAA Journal, Vol. 30(2), 1992, pp. 449-456.

van Wamelen, A., Haftka R.T. and Johnson, E. R., "Optimum Lay-ups of Composite Specimens to Accentuate the Differences between Competing Failure Criteria," Proceedings of the 8th American Society of Composites Technical Conference on Composite Materials, Cleveland, Ohio. October 1993, pp. 1045-1055.

Ley, R.P., Gurdal, Z., and Johnson, E.R. (1993). Optimal design of imperfect, anisotropic, ring-stiffened cylinders under combined loads. AIAA Paper 93-1526-CP, Proceedings of 34th AIAA Structures, Structural Dynamics, and Materials Conference, Part 4, pp 1881-1889. See also: Structural and Multidisciplinary Optimization, Vol. 9, Nos. 3-4, July 1995, pp.160-167

Ley, R.P.; Johnson, E.R.; Gürdal, Z. 1994: Buckling of imperfect, anisotropic, ring-stiffened cylinders under combined loads. AIAA J. 32, 1302–1309

Johnson, E. R., and Rastogi, N., "Interacting Loads in an Orthogonally Stiffened Composite Cylindrical Shell," AIAA Paper 94-1646, Proceedings, AIAA/ASME/ASCE/AHS/ASC 35th Structures, Structural Dynamics, and Materials Conference, Hilton Head, SC, April 18-20, 1994, AIAA, Washington, DC, 1994, pp. 2607-2620.

Mason, B., Haftka, R.T., and Johnson, E.R., "Analysis and Design of Composite Channel Frames," Proceedings of the AIAA/ NASA/ USAF/ ISSMO 5th Symposium on Multidisciplinary Analysis and Optimization, Vol. 2, AIAA Paper 94-4346-CP, Panama City, Florida, September 1994, pp. 1023-1040.

Boitnott, R. L., Starnes, J. H., Jr., and Johnson, E. R., "Nonlinear Response and Failure of Pressurized Composite Curved Panels," Journal of Aerospace Engineering, Vol. 8, No. 3, July 1995, pp. 129– 138.

Vinay, K. G., Jaunky, N., Johnson, E. R., and Ambur, D. R., "Intralaminar and Interlaminar Progressive Failure Analyses of Composite Panels with Circular Cutouts," Proceedings of the AIAA/ASME/ASCE/AHS/ASC 43rd Structures, Structural Dynamics, and Materials Conference, Denver, CO. AIAA Paper No. 2002-1745, 2002.