



Professor Dewey H. Hodges

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<http://meettheprof.com/dhodges>
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<http://www.energy.gatech.edu/research/profile.php?id=91>

Professor of Aerospace Engineering
Georgia Institute of Technology
<http://www.ae.gatech.edu/~dhodges/>

Education:

B.S., Aerospace Engineering, 1969, The University of Tennessee, Knoxville
M.S., Aeronautical and Astronautical Engineering, 1970, Stanford University
Ph.D., Aeronautical and Astronautical Engineering, 1973, Stanford University

Biography:

Dr. Hodges became Professor of Aerospace Engineering at Georgia Tech in 1986. From 1970–1986 he was a research scientist at the U.S. Army Aero flight dynamics Directorate at Ames Research Center. During those years he also served as a Lecturer at Stanford University and in 1984 was a guest research scientist at the DLR in Braunschweig, Germany. Dr. Hodges has published three books and over 320 technical papers in journals and conference proceedings in the fields of rotorcraft dynamics, structural dynamics, aeroelasticity, structural mechanics and stability, computational mechanics, and optimal control. He has advised 27 PhD graduates and 32 MS graduates in his 25 years at Georgia Tech. He is an elected Fellow of the American Institute of Aeronautics and Astronautics, the American Helicopter Society and the American Academy of Mechanics. He is a member of the American Society of Mechanical Engineers. He serves on the editorial boards for the Journal of Fluids and Structures and the Journal of Mechanics of Materials and Structures. He has served on the AHS Dynamics Committee and the AIAA Structural Dynamics Technical Committee, as chairman of the Stability Committee of the ASCE Engineering Mechanics Division, as an Associate Editor of AIAA Journal, of Vertica, and of the ASCE Journal of Engineering Mechanics, and on the Editorial Boards of the International Journal of Solids and Structures and the International Journal for Engineering Analysis and Design.

Professor Hodges has presented papers and seminars at many technical conferences and universities across the United States, Western Europe, and South America. He has advised 26 PhD and 29 MS graduates. To his credit thus far he has authored or coauthored three books, two book chapters, and 170 technical papers in refereed journals. He has edited one book and coauthored two U.S. Patents.

In recent years his research group at Georgia Tech has been developing asymptotic methods for accurate analysis and stress recovery in composite beams (including helicopter rotor blades), plates, and shells. The computer programs VABS (for composite beams) and VAPAS (for composite plates and shells) are in use around the world. These codes facilitate the accurate modeling and accurate stress recovery of internally complex structural members using generalized forms of standard reduced-order models for beams, plates, and shells. In addition, his group has developed NATASHA for nonlinear aeroelasticity of HALE aircraft. Prof. Hodges has received several awards in his professional career. These include his election to Fellow in three professional societies: the American Academy of Mechanics, the American Helicopter Society (AHS), and the American Institute of Aeronautics and Astronautics (AIAA). In addition he has been awarded a NASA Technology Utilization Award (1975), two NASA Tech Brief Awards (1976 and 1990), a U.S. Army Commendation Medal (1977), the prestigious U.S. Army Research and Development Achievement Award (1979), six Official U.S. Army Commendations (1980-1986), two SAIC Technical Paper Awards (1990 and 1998), and three Sigma Xi Research Awards (1990, 1995, and 2003). His research while a visiting scientist at DLR in Braunschweig, Germany led to his receiving the Director's Award for Technological Achievement in 1984. He serves on the Editorial Boards of Journal of Fluids and Structures and the Journal of Mechanics of Materials and Structures. He has served as an Associate Editor for the AIAA Journal, as a member of the AIAA Structural Dynamics Technical Committee, multiple terms as a member of the AHS Dynamics Committee, on

the Editorial Board of the International Journal of Solids and Structures and has served as an associate editor of the ASCE Journal of Engineering Mechanics.

Research, theoretical, applied, and computational mechanics with focus on:

- Aeroelasticity and rotorcraft dynamics
- Structural mechanics and structural dynamics (including FEM)
- Classical and multibody dynamics
- Computational optimal control

Honors and Distinctions:

- Fellow of the AIAA
- Fellow of the American Helicopter Society
- Fellow of the American Academy of Mechanics
- NASA Technology Utilization Awards (2 times)
- U.S. Army Commendations (6 times)
- U.S. Army Research and Development Achievement Award, and Director's Award for Technological Achievement,
- Sigma Xi Thesis Advisor Awards (3 times).
- Sigma Xi Sustained Research Award, 2011

Selected Publications:

Hodges, Dewey H.; and Pierce, G. Alvin: *An Introduction to Structural Dynamics and Aeroelasticity*, Cambridge University Press, New York, 2011, Second Edition.

Simitses, George J.; and Hodges, Dewey H.: *Fundamentals of Structural Stability*, Elsevier, New York, 2006.

Hodges, Dewey H.: *Nonlinear Composite Beam Theory*, AIAA, Washington, D.C., 2006.

Roithmayr, Carlos M.; and Hodges, Dewey H., "Forces Associated with Nonlinear Nonholonomic Constraint Equations," *International Journal of Non-Linear Mechanics*, vol. 45, no. 4, 2010, pp. 357 – 369.

Ho, Jimmy C.; Hodges, Dewey H.; and Yu, Wenbin: "Energy Transformation to Generalized Timoshenko Form for Nonuniform Beams," *AIAA Journal*, vol. 48, no. 6, 2010, pp. 1268 – 1272.

Sotoudeh, Zahra; Hodges, Dewey H.; and Chang, Chong-seok: "Validation Studies for Aeroelastic Trim and Stability Analysis of Highly Flexible Aircraft," *Journal of Aircraft*, vol. 47, no. 4, July-August 2010, pp. 1240 – 1247.

Hodges, Dewey H.; Rajagopal, Anurag; Ho, Jimmy C.; and Yu, Wenbin: "Stress and Strain Recovery for the In-plane Deformation of an Isotropic Tapered Strip-Beam," *Journal of Mechanics of Materials and Structures*, vol. 5, no. 6, 2010, pp. 963 – 975.

Sotoudeh, Zahra; and Hodges, Dewey H.: "Modeling Beams with Various Boundary Conditions Using Fully Intrinsic Equations," *Journal of Applied Mechanics*, vol. 78, no. 1, 2011, article 031010.

Patil, Mayuresh J.; and Hodges, Dewey H.: "Variable-order finite elements for nonlinear, intrinsic, mixed beam equations," *Journal of Mechanics of Materials and Structures*, vol. 6, no. 1, 2011, pp. 479 – 493.

Dixit, Akash; and Hodges, Dewey H.: "A general damage theory: Solution of nth-order equations using Unified Framework," *Mechanics Research Communications*, vol. 38, 2011, pp. 486 – 493.