

Fig. 3 Wrinkling deformations of thin-film membrane loaded in tension by symmetric corner loads.

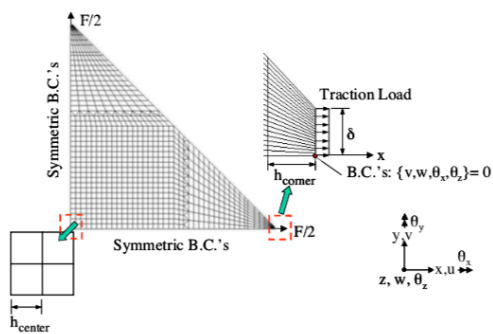


Fig. 4 Symmetric-quadrant model of thin-film membrane loaded in tension by corner tractions.

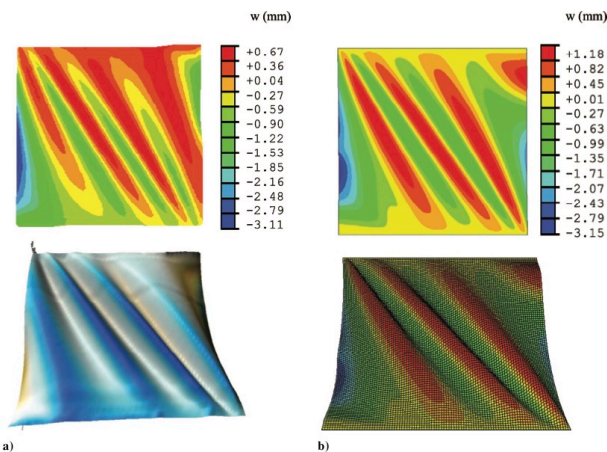


Fig. 2 Wrinkling deformations of clamped, square, thin-film membrane (Mylar film) subjected to prescribed displacement along top edge: a) experiment (photogrammetry),<sup>22</sup> and b) GNL/finite element method shell analysis (ABAQUS, S4R5).

## Dr. David W. Sleight

**The left-most images above are from:** Alexander Tessler and David W. Sleight, “Geometrically nonlinear shell analysis of wrinkled thin film membranes with stress concentrations”, One of the AIAA SDM Meeting papers, not identified in the pdf file. The most recent reference is dated 2006.

**The right-most images above are from:** Alexander Tessler, David W. Sleight and John T. Wang, “Effective modeling strategies for nonlinear shell analysis of thin membranes exhibiting structural wrinkling”, Journal of Spacecraft and Rockets, Vol. 41, No. 5, September-October 2004

See:

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### Selected Publications:

Wang, J. T., Dávila, C. G., Sleight, D. W., and Krishnamurthy, T., "Crown Panel Stiffener-Frame Intersection Structural Integrity Analyses," presented at the 5th NASA/DoD Conference on Advanced Composites Technology, Seattle, WA, 1994.

Wang, J. T., Raju, I. S., and Sleight, D. W., “Fracture Mechanics Analysis of Composite Skin-Stiffener Debond Configurations with Shell Elements,” AIAA Paper 94-1389, 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. 676-693

David W. Sleight and John T. Wang, “Buckling Analysis of Debonded Sandwich Panel Under Compression”, NASA Technical Memorandum 4701, December 1995

David W. Sleight, “Progressive failure analysis method for laminated composite structures”, NASA/TP-1999-209107, 1999

E.H. Glaessgen, D.W. Sleight, T. Krishnamurthy and I.S. Raju, “Analyses for debonding of stitched composite sandwich structures using improved constitutive models”, 42nd AIAA SDM Conference, AIAA Paper No. 2001-1279, April 16-19, 2001

J.T. Wang, T.F. Johnson, D.W. Sleight and E. Saether, "Cryogenic tank structure sizing with structural optimization method", 42nd AIAA SDM Conference, AIAA Paper No. 2001-1599, April 16-19, 2001

Alexander Tessler, David W. Sleight, & John T. Wang, "Nonlinear shell modeling of thin membranes with emphasis on structural wrinkling", 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics and Materials Conference and Exhibit. Norfolk, VA: AIAA-2003-1931, 2003

Alexander Tessler, David W. Sleight and John T. Wang, "Effective modeling strategies for nonlinear shell analysis of thin membranes exhibiting structural wrinkling", Journal of Spacecraft and Rockets, Vol. 41, No. 5, September-October 2004

John T. Wang, Tzikang Chen, David W. Sleight and Alex Tessler, "Simulating nonlinear deformations of solar sail membranes using explicit time integration", 45th AIAA/ASME/ASCE Structures, Structures Dynamics, and Material Conference. April 19-22, 2004, Palm Springs, CA, USA

Tessler, A., Sleight, D. W. and Wang, J. T., 2005. Effective modeling and nonlinear shell analysis of thin membranes exhibiting structural wrinkling, Journal of Spacecraft and Rockets, 42, 2, 287-298.

Sleight, D. W., Michii, Y., Lichodziejewski, D., Derbès, B., Mann, T. O., Slade, K. N., & Wang, J. T., Finite element analysis and test-correlation of a 10 meter inflation-deployed solar sail. Structures, Structural Dynamics and Materials Conference. Austin, Texas: 46th AIAA/ASME/ASCE/AHS/ASC, 2005.

David W. Sleight, Yuki Michii, David Lichodziejewski, Billy Derbes and Troy O. Mann, "Structural analysis of an inflation-deployed solar sail with experimental validation", Structures, Structural Dynamics and Materials Conference. Austin, Texas: 46th AIAA/ASME/ASCE/AHS/ASC, 2005.

Edward H. Glaessgen, James R. Reeder, David W. Sleight, John T. Wang, Ivatury S. Raju and Charles E. Harris, "Debonding failure of sandwich-composite cryogenic fuel tank with internal core pressure", Journal of Spacecraft and Rockets, Vol. 42, No.4, July-August 2005

John T. Wang, Clarence C. Poe, Jr., Damodar R. Ambur and David W. Sleight, "Residual strength prediction of damaged composite fuselage panel with R-curve method", Composites Science and Technology, Vol. 66, No. 14, November 2006, pp. 2557-2565

Alexander Tessler and David W. Sleight, "Geometrically nonlinear shell analysis of wrinkled thin film membranes with stress concentrations", One of the AIAA SDM Meeting papers, not identified in the pdf file. The most recent reference is dated 2006.

Vivek Mukhopadhyay, Su-Yuen Hsu, Brian H. Mason, Mike D. Hicks, William T. Jones, David W. Sleight, Julio Chu, Jan L. Spangler, Hilmi Kamhawi and Jorgen L. Dahl, "Adaptive modeling, engineering analysis and design of advanced aerospace vehicles", AIAA SDM Meeting, Paper 2006-2182, 2006

Alexander Tessler, David W. Sleight and (possibly) John T. Wang, "Geometrically nonlinear shell analysis of wrinkled thin-film membranes with stress concentrations, NASA Technical Reports Server (NTRS), 2013