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Research Summary:

Theoretical and Applied Mechanics, with a special emphasis on differential equations and asymptotic methods, elasticity theory, thin plates/shells, thin films, layered materials, bifurcations, materials science, and stability problems.

Selected Publications:

- Coman, Ciprian D. and Bassom, Andrew P., 2018. On the neutral stability curve for shallow conical shells subjected to lateral pressure, *Mathematics and Mechanics of Solids*. 23(5), 727-747
- Coman, Ciprian D. and Bassom, Andrew P., 2018. On the Mathematical Structure of Eigen-deformations in a Föppl-von Kármán Bifurcation System, *Journal of Elasticity*. 131, 183-205
- Coman, Ciprian D., 2018. On the asymptotic reduction of a bifurcation equation for edge-wrinkling instabilities, *Acta Mechanica*. 229(3), 1099-1109
- Ciprian D. Coman and Andrew P. Bassom, 2018. Eigen-transitions in cantilever cylindrical shells subjected to vertical edge loads, *Mathematics and Mechanics of Solids* (in press)
- Ciprian D. Coman, "Bifurcation instabilities in finite bending of circular cylindrical shells", *International Journal of Engineering Science*, Vol. 119, pp 249-264, October 2017

Ciprian D. Coman and Andrew P. Bassom, "Singularities and wrinkling: The case of a concentrated force", *International Journal of Engineering Science*, Vol. 106, pp 229-244, September 2016

Ciprian D. Coman and Andrew P. Bassom, "Asymptotic limits and wrinkling patterns in a pressurized shallow spherical cap", *International Journal of Non-Linear Mechanics*, Vol. 81, pp 8-18, May 2016

Ciprian D. Coman and Andrew P. Bassom, "On the nonlinear membrane approximation and edge-wrinkling", *International Journal of Solids and Structures*, Vol. 82, pp 85-94, March 2016

Coman, C.D., Matthews, M., Bassom, A.P.: Asymptotic phenomena in pressurised thin films. *Proc. R. Soc. Lond. A* 471, 20150471 (2015)

Coman, C.D., Bassom, A.P.: On the nonlinear membrane approximation and edge-wrinkling. *Int. J. Solids Struct.* 82, 85–94 (2015)

Coman, C.D., Liu, X.: Buckling-resistant thin annular plates in tension. *Math. Mech. Solids* 19, 925–951 (2014)

Coman, C.D.: Asymmetric bifurcations in a pressurised circular thin plate under initial tension. *Mech. Res. Commun.* 47, 11–17 (2013)

Ciprian D. Coman, "Some applications of the WKB method to the wrinkling of bi-annular plates in tension", *Acta Mechanica*, Vol. 224, No. 2, pp 399-423, February 2013

C.D. Coman, X. Liu, "Buckling-resistant thin annular plates in tension", *Math. Mech. Solids* (2013),

Coman CD, Liu X: Semi-analytical approximations for a class of multi-parameter eigenvalue problems related to tensile buckling. *Z Angew Math Phys* 2013, 64: 863–883.

Xiang Liu and Ciprian Coman, "The localised wrinkling of a stretched bi-annular thin plate", *World Academy of Science, Engineering and Technology*, Vol. 6, No. 11, November 2012, waset.org/publications/12322

C.D. Coman and X. Liu. Semi-analytical approximations for a class of multi-parameter eigenvalue problems related to tensile buckling. *Z. angew. Math. Phys.*, 2012. (accepted, May 2012).

Coman, C.D., Bassom, A.P.: Erratum to "On the wrinkling of a pre-stressed annular thin film in tension [Journal of the Mechanics and Physics of Solids (2007) 1601]". *J. Mech. Phys. Solids* 60, 1240–1240 (2012)

Coman, C.D.: Instabilities of highly anisotropic spinning disks. *Math. Mech. Solids* 16, 3–17 (2011)

Coman C.D.: On interactive buckling in a sandwich structure. *ZAMP* 61, 565–577 (2010)

Coman C.D.: Edge-wave buckling of rolled elastic strips: asymptotic results. *Acta Mech.* 211, 101–113 (2010)

Coman, C.D.: Multiple boundary-layer phenomena in the neutral stability envelope of a wrinkling problem. (Unpublished manuscript, 2009)

Coman C.D., Bassom A.P.: On a class of buckling problems in a singularly perturbed domain *Quart. J. Mech. Appl. Math.* 62, 89–103 (2009)

Ciprian D. Coman and Andrew P. Bassom, "Higher-order asymptotics for edge-buckling of pre-stressed thin plates under in-plane bending", *Journal of Engineering Mathematics*, Vol. 63, No. 2, pp 327-338, April 2009

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Coman CD, Bassom AP: On the wrinkling of a pre-stressed annular thin film in tension. *J Mech Phys Solids* 2007, 55: 1601–1617.

- Coman C.D.: On the applicability of tension field theory to a wrinkling instability problem. *Acta Mech.* 190, 57–72 (2007)
- C. D. Coman, Inhomogeneities and localised buckling patterns, *IMA J. Appl. Math.*, 71 (2006) 133–152.
- Coman C.D., Haughton D.M.: Localized wrinkling instabilities in radially stretched annular thin films. *Acta Mech.* 185, 179–200 (2006)
- Ciprian D. Coman and David M. Haughton, “On some approximate methods for the tensile instabilities of thin annular plates”, *Journal of Engineering Mathematics*, Vol. 56, No. 1, pp 79-99, September 2006
- Wadee M.K., Coman C.D., Bassom A.P.: Numerical stability criteria for localised post-buckling solutions in a strut-on-foundation model. *ASME J. Appl. Mech.* 71, 334–341 (2004)
- Coman, C. D. (2004), Secondary bifurcations and localisation in a three-dimensional buckling model, *Zeitschrift für angewandte Mathematik und Physik ZAMP*, V. 55, pp. 1050-1064.
- Coman, C.D., Bassom, A.P., Wadee, M.K., 2003. Elasto-plastic localised response in one-dimensional structural models. *Journal of Engineering Mathematics* 47, 83–100.
- Wadee M. K., Coman C. D., Bassom A. P. 2002 Solitary wave interaction phenomena in a strut buckling model incorporating restabilisation *Phys. D* 163 26 48