CARLOS A. FELIPPA

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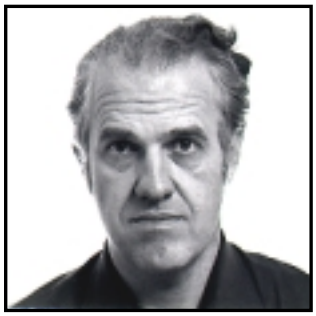

1984 photo.

RESEARCH INTERESTS

Structural and Solid Mechanics, Nonlinear and Dynamic Analysis, Computational Mechanics, Finite Element Methods, Numerical Methods, Variational Principles, Special interest in model-based simulation of Coupled Fields and Multiphysics problems: elastoacoustics, aeroelasticity, aeroservoelasticity, thermomechanics and electrothermomechanics, control-structure interaction, particle methods, extreme event simulation.

EXPERIENCE

UNIVERSITY OF COLORADO, Boulder, Colorado

1986–date Professor of Aerospace Engineering. Director, Center for Space Structures and Controls (1/89–6/91). (Associate Director, 6/86–12/88). Participated in the formation and growth of the Center for Space Structures and Controls (now Center for Aerospace Structures). This center focuses on multidisciplinary sponsored research in aerospace structures, computational and experimental mechanics. Participated in the creation of a graduate instructional program in Structures, Structural Dynamics and Controls within the department of Aerospace Engineering Sciences (AES). The AES doctoral program was rated #4 within the USA in 2010 by the National Research Council (NRC), trailing only Stanford, CalTech and Michigan.

LOCKHEED MISSILES & SPACE CO., Sunnyvale, California

1980–1986 Senior Staff Scientist, Applied Mechanics Laboratory, Lockheed Palo Alto Research Laboratory. Responsible for creating the architecture of NICE (Network of Interactive Computational Elements), an integrated software system for computational mechanics. This system was chosen by NASA/LaRC in 1984 as Testbed candidate for integration of computational-mechanics research pertinent to the space program. Used at LMSC in the design of the Poseidon missile system for the Trident II submarine fleet.

1977–1980 Staff Scientist, Applied Mechanics Laboratory, Lockheed Palo Alto Research Laboratory. Conducted research in nonlinear structural analysis, structural dynamics, coupled problems, minimum weight optimization by mathematical programming, constraint handling by augmented Lagrangian methods, interactive control of applications software, and database management technology.

Formulated and developed software for the analysis of nonlinear structures by finite element methods. Collaborated with Lockheed Ocean Systems in commercial and classified projects.

1971–1976 Research Scientist, Structures Laboratory, Lockheed Palo Alto Research Laboratory. Formulated and implemented computational techniques for finite element analysis of structures, structural dynamics, and fluid-structure interaction problems.

THE BOEING COMPANY, Commercial Airplane Division, Seattle, Washington

1969–1970 Research Engineer, Structural Analysis Research Group. Developed stress and stability analysis programs for advanced composite structures, and formulated techniques for automated structural optimization. Participated in analysis of 747 and SST components by finite element methods.

1968–1969 Research Specialist, Mathematical Analysis Unit. Developed digital computing techniques for analysis of aircraft structures, with emphasis on finite–deflection models for creep-forming of aircraft wings, and structural eigenvalue problems.

UNIVERSITY OF CALIFORNIA, Berkeley, California

1967–1968 Post-Doctoral Research Associate. Developed applications of finite element methods to plates, shells and three-dimensional solids.

1963–1966 Research Assistant. As doctoral student (1964-66) developed refined finite element techniques for analysis of two-dimensional static and vibrations problems. The thesis work implemented the first FEM formulation that combined material and geometric nonlinearities. As MS student (1963-64) performed experimental testing work in reinforced concrete structures for the BART (Bay Area Rapid Transit) system.

EDUCATION

UNIVERSITY OF CALIFORNIA, Berkeley, California

1966 Ph.D., Civil Engineering. Dissertation: "Refined Finite Element Analysis of Linear and Nonlinear Two-Dimensional Structures." Thesis advisor: R. W. Clough. Second reader: E. L. Wilson.

1964 M.S., Civil Engineering. Advisor: K. F. Pister.

UNIVERSIDAD NACIONAL DE CORDOBA, Córdoba, Argentina

1963 Ingeniero Civil

ACCESS AUTHORIZATION

Naturalized US Citizen. Clearances: Secret 1972–79 and top-secret 1979–86, while employed at Lockheed Missiles and Space Company, Summyvale, California.

PROFESSIONAL ACTIVITIES

Member, Society for Industrial and Applied Mathematics, Americal Society of Mechanical Engineers (nominated for Fellow), American Institute for Aeronautics and Astronautics, and U.S. Association for Computational Mechanics (executive board member and Fellow).

Editorial or Advisory Board Member for *Advances in Engineering Software*, *Archives of Computational Methods in Engineering*, *Computer Methods in Applied Mechanics and Engineering*, *Computers and Structures*, *Engineering Computations*, *Finite Elements in Analysis and Design*, *International Journal for Numerical Methods in Engineering*, *Computing Systems in Engineering*, *Revista Internacional de Métodos Numéricos para Cálculo y Diseño en Ingeniería*.

Invited keynote speaker and/or lecturer on numerous occasions. Has taught short courses and seminars on finite element analysis, nonlinear equation solving, interactive applications programming and database management systems.

HONORS AND AWARDS

Duarte y Quirós prize to top Ingeniero Civil graduate, Universidad Nacional de Córdoba, 1963.

Control Data Corp. PACER Fellowship PI, 1986–1988.

AGARD Lecturer at ONERA (Paris, France), and LTAS (Liège, Belgium), 1988.

McDonnell-Douglas Foundation Award to set up Structural Dynamics and Control Laboratory, Dec 1991.

SAE Arch. T. Colwell Merit Award, September 1993

NTNF Visiting Scholar Fellowship, August–December 1993.

Fellow, US Association of Computational Mechanics (USACM), July 1995.

Alexander von Humboldt Research Award, selected 1995, conferred 1997.

Honorary Member, Argentine Association of Computational Mechanics, 1997.

Fellow, International Association of Computational Mechanics (IACM), July 1998.

Computational Sciences Award, US Association of Computational Mechanics, August 1999.

Summer Faculty Fellowship, Sandia National Laboratories, Albuquerque, June-August 2001.

Foreign Investigator Fellowship, Ministerio de Educacion y Cultura, Madrid, Spain, to support Visiting Scientist status for research at CIMNE, Barcelona, Spain. Appointment period: 6 weeks starting mid-May. Years: 2002, 2006 through 2012.

Sociedad de Metodos Numericos en Ingenieria (SEMNI) Prize, Madrid, June 2002

Visiting Faculty Award, Conservatoire National des Arts et Metiers (CNAM), Paris, May-July 2004.

NASA Software Development Award, NASA Langley RC, announced 2006, awarded 2007.

Elected Permament Member-at-Large, USACM Executive Committee, 2007.

IACM Computational Mechanics Award, awarded at WCCM9, Sydney, Australia, July 2010.

UNDERGRADUATE & GRADUATE COURSES CREATED AT CU

Introduction to Finite Element Methods, ASEN 5007, Fall 1986, repeated every year. Web site: `http://caswww.colorado.edu/courses.d/IFEM.d/Home.html`

Nonlinear Finite Element Methods, ASEN 5007, Spring 1987, repeated every 2-3 years. Web site: `http://caswww.colorado.edu/courses.d/NFEM.d/Home.html`

Advanced Finite Element Methods, ASEN 5637, Spring 1990, repeated every 2-3 years. Web site: `http://caswww.colorado.edu/courses.d/AFEM.d/Home.html`

Variational Methods in Mechanics (in collaboration with Charbel Farhat), Fall 1988, offered irregularly 1988-1993, contents folded now into ASEN 5637.

Structures, ASEN 3112, 4-credit junior core course created as part of AES Curriculum 2000, Offered since Fall 1998, repeated every Fall. Co-taught in collaboration with Charbel Farhat (1998), Jason Hinkle (1999–2000), K. C. Park (2001–2002) and M. Hussein (2008–2009). Replaces Structures 1 and 2 of previous curriculum. Partly restructured 2007-2010.

Object-Oriented Finite Element Programming, ASEN 5519, offered Fall 1992.

Mechanics of Aerospace Structures, ASEN 5012, offered Fall 1996 and 1997.

Finite Element Programming with Mathematica, ASEN 5519, offered Fall 1997.

Fluid-Structure Interaction and Multiphysics, ASEN 5519, offered Fall 2004.

Linear Algebra and Differential Equations, APPM 2360, co-taught with Applied Mathematics Department instructors, Spring 2003 and 2004.

MAJOR RESEARCH & INFRASTRUCTURE SUPPORT 1992-DATE

- National Science Foundation. High Fidelity Simulation for Heterogeneous Civil and Mechanical Systems. PI: C. A. Felippa. Co-PIs: K. C. Park. Amount: $496K, September 2002-2006.
- National Science Foundation: ESC-9217394. Title: High Performance Computational Methods for Coupled Fields and GAFD Turbulence (a Grand Challenge Applications award). PIs: C. A. Felippa and J. Toomre. Co-PIs: C. Farhat, G. Graefe, D. Grunwald, J. Hart, J. Herring, C. Laney, J. Mandel, O. McBryan, J. McWilliams, K. C. Park and P. Woodward. Amount: $5.1M, 1992-1997. Renewed on October 1997 under title: High Performance Simulation of Multiphysics Problems in Turbulence, Control and Structural Design, ECS-9725004. PI: C. A. Felippa, Coordinating PIs: C. Farhat, J. Mandel, O. McBryan, co-PIs: M. Balas, X.-C. Cai, D. Grunwald, D. Heimbigner, M. Lesoinne, K. C. Park. Amount: $1.86M, Oct. 1997-April 2001, NCE to April 2003.
- National Science Foundation/Sandia National Labs Grant CTS-9732179. Title: Modeling, Simulation and Validation of High-Fidelity Structural Dynamical Systems, National Science Foundation, PI: K. C. Park, co-PI: C. A. Felippa, Amount: $180K, 1998-2001.
- Department of Energy ASCI level II. Co-I; C. A. Felippa, PIs: T. Manteuffel, S. McCormick, C. Farhat and K. C. Park, Amount $1.96M, 1999-2001.
- DOE/Sandia National Labs: Finite Elements for Salinas, PI: C. A. Felippa, Amount: $91K, 1999-2002.
- Sandia National Laboratories, Parallel Computational Methods for Large-Scale Structural Dynamics, PI: K. C. Park, co-PIs: C. Farhat and C. A. Felippa, $814K, 1996-1998.

- Sandia National Laboratories, A Matrix Free Algorithm for Solving Nonlinear Mechanics Problems. PI: K. C. Park, Co-PI: C. A. Felippa. $460K, 1996-1999.
- Air Force Office of Scientific Research. Numerical Simulation of Three-Dimensional High G Dynamic Maneuvers of a Complete Aircraft Configuration. 1995-1998. PI: C. Farhat, co-PI: J. Mandel, co-Is: X.-C. Cai and C. Felippa. Amount: $1.8M, 1998-2000.
- National Science Foundation. Graduate Research Traineeship: Integrating HPCC into the Physical Sciences, PI: O. McBryan. Co-PIs: C. A. Felippa and J. Toomre. Supports graduate students only. Amout: $635K, 1994-2002.
- National Science Foundation. Academic Research Infrastructure: Acquisition of a Grand Challenge Data Laboratory. Equipment purchase only. PI: O. McBryan. Co-PIs: C. A. Felippa and J. Toomre. Amount: $800K, 1996-2001.

ONLINE POSTED TEXTBOOKS

Websites for ASEN 5007, 6107, 6367 and 3112 date from the indicated years. They are periodically updated as those courses were taught. Collectively they receive about 80–100 hits/day from outside CU Boulder, mostly from overseas students who use them for self-study, as well as complementary material for similar courses in other Universities. (High hit rates are confirmed by the Google page ranking; typing e.g., "Introduction to Finite Element Methods" in search brings up the book home page as #1 and #2 hits.) Websites under construction are primarily intended to organize published research in book format to communicate with collaborators in USA and Europe.

Introduction to Finite Element Methods, for graduate core course ASEN 5007, website started 1995:
`http://www.colorado.edu/engineering/cas/courses.d/IFEM.d/Home.html`

Nonlinear Finite Element Methods, for graduate elective course ASEN 6107, website started 1995:
`http://www.colorado.edu/engineering/cas/courses.d/NFEM.d/Home.html`

Advanced Finite Element Methods, for graduate elective course ASEN 6367, website started 1996:
`http://www.colorado.edu/engineering/cas/courses.d/AFEM.d/Home.html`

Fluid-Structure Interaction, for graduate Special Topics course ASEN 5119, website started 2004:
`http://www.colorado.edu/engineering/cas/courses.d/FSI.d/Home.html`

Introduction to Aerospace Structures, for undergraduate core course ASEN 3112, website started 2008:
`http://www.colorado.edu/engineering/cas/courses.d/Structures.d/Home.html`

Matrix Finite Element Methods in Dynamics, under construction, website started 2011:
`http://www.colorado.edu/engineering/cas/courses.d/MFEMD.d/Home.html`

Matrix Finite Element Methods in Statics, under construction, website started 2012:
`http://www.colorado.edu/engineering/cas/courses.d/MFEMS.d/Home.html`.

Advanced Variational Methods in Mechanics, under construction, website started 2012:
`http://www.colorado.edu/engineering/cas/courses.d/AVMM.d/Home.html`.

BOOK ACCEPTED FOR PUBLICATION

Nonlinear Finite Element Methods With Mathematica, to appear in the Springer-Verlag Computational Mechanics Series. A print version of the online book cited above, under preparation, estimated publication date summer 2019.

PUBLICATIONS (JOURNALS, BOOK CHAPTERS AND REFEREED PROCEEDINGS)

Articles Accepted, Under Review or In Preparation

1. C. A. Felippa and K. C. Park, Cubic matrix templates for dynamic and vibration analysis, *Computers & Structures*, in preparation
2. C. A. Felippa, E. Oñate and S. R. Idelsohn, FIC variational framework for elastic media: Part 1. Functionals, *Arch. Comp. Meth. Engrg.*, in preparation
3. C. A. Felippa, E. Oñate and S. R. Idelsohn, FIC variational framework for elastic media: Part 3. Static analysis, *Arch. Comp. Meth. Engrg.*, in preparation
4. C. A. Felippa, E. Oñate and S. R. Idelsohn, FIC variational framework for elastic media: Part 4. Spectral analysis, *Arch. Comp. Meth. Engrg.*, *Arch. Comp. Meth. Engrg.*, in preparation
5. C. A. Felippa, E. Oñate and S. R. Idelsohn, FIC variational framework for elastic media: Part 5. Dynamic analysis, *Arch. Comp. Meth. Engrg.*, in preparation

Journal Articles

6. C. A. Felippa, E. Oñate and S. R. Idelsohn, FIC variational framework for FIC formulations in continuum mechanics: high order tensor derivatives and invariants, *Arch. Comp. Meth. Engrg.*, online publication Oct 2017, **25**/4, 191-236, 2018.
7. J. A. Gonzalez, R. Kolman, S. S. Cho, C. A. Felippa and K. C. Park, Inverse mass matrix by the method of Lagrange multipliers, *Int. J. Numer. Meth. Engrg.*, **113**(2), 277–295, 2018.
8. C. A. Felippa, Principios variacionales parametrizados en elasticidad no-linear, *Rev. Int. Met. Numer. Calc. Dis. Ing.*, **34**-6, 301–309, 2018.
9. W. T. Matias Silva, A. A. Cunha, M. P. Duque Gutierrez and C. A. Felippa, Analisis no lineal de porticos planos usando la formulacion corrotacional con elemento de viga Timoshenko, *Rev. Int. Met. Numer. Calc. Dis. Ing.*, **33**(1-2), 115-122, 2017.
10. P. Nadukandi, E. Oñate, S. Idelsohn and C. A. Felippa, Un método Petrov-Galerkin de alta resolución para problemas de convección, difusion y reacción, *Rev. Int. Met. Numer. Calc. Dis. Ing.*, **32**, 100–109, 2016.
11. M. A. Perez, S. Oller, C. A. Felippa and L. Gill, Micro-mechanical approach for the vibration analysis of CFRP laminates under impact-induced damage - I. Formulation and modeling, *Composites B: Engineering*, **83**, 306–316, 2015.
12. M. A. Perez, S. Oller, C. A. Felippa and L. Gill, Micro-mechanical approach for the vibration analysis of CFRP laminates under impact-induced damage - II. Experimental validation, *Composites B: Engineering*, **83**, 317–324, 2015.
13. C. A. Felippa, Q. Guo and K. C. Park, Mass matrix templates: general formulation and 1D examples, *Arch. Comp. Meth. Engrg.*, **22**, 1–66, 2015.
14. M. Mostafa, M. V. Sivaselvan and C. A. Felippa, A solid shell corototional element based on ANDES, ANS and EAS for geometrically nonlinear analysis, *Int. J. Numer. Meth. Engrg.*, **95**, 145–180, 2013.

15. M. Mostafa, M. V. Sivaselvan and C. A. Felippa, Reusing linear finite elements in material and geometrically nonlinear analysis — application to plane stress problems, *Finite Elem. Anal. Des.*, **69**, 62–72, 2013.

16. J. A. Gonzalez, K. C. Park, I. Lee and C. A. Felippa, Partitioned vibration analysis of internal fluid-structure interaction problems, *Int. J. Numer. Meth. Engrg.*, **92**, 268–300, 2012.

17. E. Oñate, P. Nadukandi, S. R. Idelsohn, J. Garcia and C. A. Felippa, A family of residual-based stabilized finite element methods for Stokes flows, *Int. J. Numer. Meth. Fluids*, **65**, 106–134, 2011.

18. E. Oñate, S. R. Idelsohn and C. A. Felippa, Consistent pressure Laplacian stabilization for incompressible continua via higher-order finite calculus, *Int. J. Numer. Meth. Engrg.*, **87**, 171–195, 2011.

19. K. C. Park, R. Ohayon, C. A. Felippa and J. A. Gonzalez, Partitioned formulation of internal and gravity waves interacting with flexible structures, *Comp. Meths. Appl. Mech. Engrg.*, **199**, 723–733, 2010.

20. K. C. Park, C. A. Felippa and R. Ohayon, The principal D'Alembert-Lagrange equations and applications to flexible floating systems, *Int. J. Numer. Meth. Engrg.*, **77**, 1072–1099, 2009.

21. M. R. Ross, M. A. Sprague, C. A. Felippa and K. C. Park, Treatment of acoustic fluid-structure interaction by localized Lagrange multipliers and comparison to alternative interface coupling methods, *Comp. Meths. Appl. Mech. Engrg.*, **198**, 986–1005, 2009.

22. N. dal Cortivo, C. A. Felippa, H. Bavestrello and W. T. M. Silva, Plastic buckling and collapse of thin shell structures, using layered plastic modeling and co-rotational ANDES finite elements, *Comp. Meths. Appl. Mech. Engrg.*, **198**, 785-798. 2009.

23. M. R. Ross, C. A. Felippa, K. C. Park and M. A. Sprague, Treatment of acoustic fluid-structure interaction by localized Lagrange multipliers: Formulation, *Comp. Meths. Appl. Mech. Engrg.*, **197**, 3057–3079, 2008.

24. E. Oñate and C. A. Felippa, Variational formulation of the FIC equations for solid mechanics and reaction-diffusion problems, *Comp. Meths. Appl. Mech. Engrg.*, **196**, 1078–1085. 2008.

25. J. A. González, K. C. Park, C. A. Felippa and R. Abascal, A formulation based on Lagrange multipliers for BEM-FEM coupling in contact problems, *Comp. Meths. Appl. Mech. Engrg.*, **69**, 2058–2074, 2008.

26. J. A. González, K. C. Park and C. A. Felippa, FEM and BEM coupling in elastostatics using localized Lagrange multipliers, *Int. J. Numer. Meth. Engrg.*, **197**, 623–640, 2007.

27. C. A. Felippa and E. Oñate, Nodally exact Ritz discretizations of 1D diffusion-absorption and Helmholtz equations by variational FIC and modified equation methods, *Comput. Mech.*, **39**, 91–112, 2007.

28. C. A. Felippa, Construction of customized mass-stiffness pairs using templates, invited contribution to Special Issue in honor of A. K. Noor, *ASCE J. Aerospace*, **19:4**, 241–258, 2006.

29. C. A. Felippa, Supernatural QUAD4: a template formulation, invited contribution to J. H. Argyris Memorial Issue, *Comp. Meths. Appl. Mech. Engrg.*, **195**, 5316–5342, 2006.

30. J. A. González, K. C. Park, and C. A. Felippa, Partitioned formulation of frictional contact problems using localized Lagrange multipliers, *Commun. Numer. Meth. Engrg.*, **22**, 319–333, 2006.

31. C. A. Felippa and B. Haugen, A unified formulation of small-strain corotational finite elements: I. Theory, *Comp. Meths. Appl. Mech. Engrg.*, **194**, 2285–2336, 2005.

32. C. A. Felippa, The amusing history of shear flexible beam elements, *IACM Expressions*, Issue 17, 15–19, Jan 2005.

33. C. A. Felippa and E. Oñate, Volumetric constraint models for anisotropic elastic solids, *J. Appl. Mech.*, **71**, No. 5, 731-734, 2004.

34. C. A. Felippa, A compendium of FEM integration rules for finite element work, *Engrg. Comput.*, **21**, 867–890, 2004.

35. C. A. Felippa, A study of optimal membrane triangles with drilling freedoms, *Comp. Meths. Appl. Mech. Engrg.*, **192**, 2125–2168, 2003.

36. C. A. Felippa and E. Oñate, Stress, Strain and energy splittings for anisotropic elastic solids under volumetric constraints, *Computers & Structures*, **81**, 1343–1358, 2003.

37. G. Rebel, K. C. Park, C. A. Felippa, A contact formulation based on localized Lagrange multipliers: formulation and applications to two-dimensional problems, *Int. J. Numer. Meth. Engrg.*, **54**, 263–297, 2002.

38. K. C. Park, C. A. Felippa and G. Rebel, A simple algorithm for localized construction of non-matching structural interfaces, *Int. J. Numer. Meth. Engrg.*, **53**, 1261–1285, 2002.

39. C. A. Felippa and K. C. Park, The construction of free-free flexibility matrices for multilevel structural analysis, *Comp. Meths. Appl. Mech. Engrg.*, **191**, 2111–2140, 2002.

40. C. A. Felippa, Fraeijs de Veubeke: neglected discoverer of the "Hu-Washizu Functional," *IACM Expressions*, 121–126, 2002.

41. C. A. Felippa, A historical outline of matrix structural analysis: a play in three acts, *Computers & Structures*, **79**, 1313–1324, 2001.

42. K. C. Park, C. A. Felippa and R. Ohayon, Partitioned formulation of internal fluid-structure interaction problems via localized Lagrange multipliers, *Comp. Meths. Appl. Mech. Engrg.*, **190**, 2989–3007, 2001.

43. R. Ohayon and C. A. Felippa, Special Issue: Advances in computational methods for fluid-structure interaction and coupled problems: Preface, *Comp. Meths. Appl. Mech. Engrg.*, **190**, 2977–2978, 2001.

44. C. A. Felippa, K. C. Park and C. Farhat, Partitioned analysis of coupled mechanical systems, *Comp. Meths. Appl. Mech. Engrg.*, **190**, 3247–3270, 2001.

45. C. A. Felippa, Customizing the mass and geometric stiffness of plane thin beam elements by Fourier methods, *Engrg. Comput.*, **18**, 286–303, 2001.

46. K. C. Park, C. A. Felippa and U. A. Gumaste, A localized version of the method of Lagrange multipliers and its applications, *Comput. Mech.*, **24/6**. 476–490, 2000.

47. K. C. Park and C. A. Felippa, A variational principle for the formulation of partitioned structural systems, *Int. J. Numer. Meth. Engrg.*, **47**, 395–418, 2000.

48. C. A. Felippa, On the original publication of the general canonical functional of linear elasticity, *J. Appl. Mech.*, **67/1**, 217–219, 2000.

49. C. A. Felippa and C. Militello, Construction of optimal 3-node plate bending elements by templates, *Comput. Mech.*, **24/1**, 1–13, 1999.

50. K. C. Park and C. A. Felippa, A variational framework for solution method development in structural mechanics, *J. Appl. Mech.*, **65/1**, 242–249, 1998.

51. F. J. Brito-Castro, C. Militello and C. A. Felippa, Parametrized variational principles in dynamics applied to the optimization of dynamic models of plates, *Comput. Mech.*, **20**, 285–294, 1997.

52. C. A. Felippa, K. C. Park and M. R. Justino Filho, The construction of free-free flexibility matrices as generalized stiffness inverses, *Computers & Structures*, **88**, 411–418, 1997.

53. C. A. Felippa and K. C. Park, A direct flexibility method, *Comp. Meths. Appl. Mech. Engrg.*, **149**, 319–337, 1997.

54. K. C. Park, M. R. Justino Filho and C. A. Felippa, An algebraically partitioned FETI method for parallel structural analysis: algorithm description, *Int. J. Numer. Meth. Engrg.*, **40**, 2717–2737, 1997.

55. M. R. Justino Filho, K. C. Park, and C. A. Felippa, An algebraically partitioned FETI method for parallel structural analysis: performance evaluation, *Int. J. Numer. Meth. Engrg.*, **40**, 2739–2758, 1997.

56. C. A. Felippa, Recent progress in parametrized variational principles for mechanics, *Comput. Mech.*, **11**, 443–461, 1996.
57. C. A. Felippa, Unificacion parametrica del analisis estructural: formulacion clásica y elementos mixtos d-conectados, *Rev. Int. Met. Numer. Calc. Dis. Ing.*, **12**, 371-410, 1996.
58. C. A. Felippa, Parametrized unification of matrix structural analysis: classical formulation and d-connected mixed elements, *Finite Elem. Anal. Des.*, **21**, 45–74, 1995.
59. C. A. Felippa, B. Haugen and C. Militello, From the individual element test to finite element templates: evolution of the patch test, *Int. J. Numer. Meth. Engrg.*, **38**, 199–229, 1995.
60. C. A. Felippa, L. A. Crivelli and B. Haugen, A survey of the core-congruential formulation for geometrically nonlinear TL finite elements, *Arch. Comp. Meth. Engrg.*, **1**, 1–48, 1994.
61. J. J. Schuler and C. A. Felippa, Superconducting finite elements based on a gauged potential variational principle, I. Formulation, *Comp. Systems Engrg.*, **5**, 215–225, 1994.
62. J. J. Schuler and C. A. Felippa, Superconducting finite elements based on a gauged potential variational principle, II. Numerical results, *Comp. Systems Engrg.*, **5**, 227–237, 1994.
63. C. A. Felippa, An appreciation of R. Courant's 'Variational Methods for the Solution of Problems in Equilibrium and Vibrations,' *Int. J. Numer. Meth. Engrg.*, **37**, 643–645, 1994.
64. C. A. Felippa, A survey of parametrized variational principles and applications to computational mechanics, *Comp. Meths. Appl. Mech. Engrg.*, **113**, 109–139, 1994.
65. J. Cervenka, S. Keating and C. A. Felippa, Comparison of strain recovery techniques for the mixed iterative method, *Comm. Appl. Numer. Meth.*, **9**, 925–932, 1993.
66. L. A. Crivelli and C. A. Felippa, A Total Lagrangian geometrically nonlinear beam element for analysis of three dimensional space structures, *Int. J. Numer. Meth. Engrg.*, **31**, 1122–1144, 1993.
67. K. Alvin, H. M. de la Fuente, B. Haugen and C. A. Felippa, Membrane triangles with corner drilling freedoms: I. The EFF element, *Finite Elem. Anal. Des.*, **12**, 163–187, 1992.
68. C. A. Felippa and C. Militello, Membrane triangles with corner drilling freedoms: II. The ANDES element, *Finite Elem. Anal. Des.*, **12**, 189–201, 1992.
69. C. A. Felippa and S. Alexander, Membrane triangles with corner drilling freedoms: III. Implementation and performance evaluation, *Finite Elem. Anal. Des.*, **12**, 203–239, 1992.
70. C. A. Felippa, Parametrized variational principles for micropolar elasticity, *Int. J. Solids Struc.*, **29**, 2709–2721, 1992.
71. C. A. Felippa, Principios variacionales parametrizados para elasticidad micropolar, *Rev. Int. Met. Numer. Calc. Dis. Ing.*, **8**, 267–282, 1992.
72. C. A. Felippa, Parametrized variational principles encompassing compressible and incompressible elasticity, *Int. J. Solids Struc.*, **29**, 57–68, 1992.
73. C. A. Felippa, Principios variacionales parametrizados que abarcan elasticidad compresible e incompresible, *Rev. Int. Met. Numer. Calc. Dis. Ing.*, **7**, 347–361, 1991.
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