CURRICULUM VITAE

VASSILIOS A. DOUGALIS

Born on 19 March 1949 in Athens, Greece
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Education
- B.S.E. in Civil Engineering, Princeton University, (1971). (With highest honors.)
- S. M. in Applied Mathematics, Harvard University, (1973).
- Ph. D. in Applied Mathematics, Harvard University, (1976).

Research Area
Applied Mathematics   (Numerical Analysis,
Partial Differential Equations,
Nonlinear Waves,
Underwater Acoustics).

Principal Professional Appointments
- Assistant Professor, Mathematics Department, University of Tennessee, Knoxville, (1976-82).
- Associate Professor, Mathematics Department, University of Tennessee, Knoxville, (1982-86).
- Professor, Mathematics Department, University of Crete, Heraklion, Greece, (1983-91), Associate Chairman, (1986-91).

- Professor, Mathematics Department, National Technical University, Athens, Greece, (1991-95).
- Professor, Mathematics Department, University of Athens, Greece (1995-).
- Director, Institute of Applied and Computational Mathematics, FO.R.T.H., Heraklion, Greece (2004 -).

Concurrent and Other Professional Appointments of a Month or More
- Teaching Fellow and Research Assistant in Applied Mathematics, Harvard University, (1972-76).
- Associate Director, Institute of Applied and Computational Mathematics, Research Center of Crete, FO.R.T.H. (1986-2004).
- Visiting Professor, Mathematics Department, University of Tennessee, Knoxville, (Mar.-Apr. 1988, Jan. 1989, Dec. 1989, Oct.-Dec. 1990, Aug.-Dec. 1994).

Honors
- Award for outstanding teaching at the graduate level, Mathematics Department, University of Tennessee (1979).
- D. Kappos Memorial Lecture, Hellenic Mathematical Society (1996).
- Distinguished University Teaching Prize in memory of V. Xanthopoulos and St. Pnevmatikos (2000).

Committees and Professional Service
- Greek Board for the computer network EARN (1985-91).
- University-wide Committee on Graduate Studies and Research, University of Crete (1988-91).
- Greek National Research Advisory Council, Associate Member, (1988-91), Member (1994-96).
- Member of the Scientific Committee of the First International Symposium on Methods of Lines, Surfaces and Dimensional Reduction in Computational Mathematics and Mechanics, Athens, 12-14 November 1991.
- Organizer of the session "Modelling and computational methods in Underwater Acoustics" in the 7th IMACS International Conference on Computer Methods for Partial Differential Equations, Rutgers University, 22-24 June 1992.
- IMACS Technical Committee on Computational Acoustics, Member (1992-).
- Member of the Scientific Committee of Hermis '92, First Hellenic Conference on Mathematics and Informatics, Athens, 25-26 September 1992.
- Organizer of the ERCIM Workshop on "Numerical methods for linear and nonlinear wave propagation", FORTH, Crete, 29-30 October 1992.
- Member of the Organizing Committee and Lecturer, "Advanced course on Acoustical Oceanography", MAST-IACM/FORTH, Heraklion, 7-19 June 1993.
- IMACS Technical Committee on Dynamical Systems and Nonlinear Science (1993-).
- University-wide Library Committee, National Technical University (1993-94).
- Guest editor, Special issue on Computational Underwater Acoustics, Journal of Computational Acoustics, vol. 2, No. 2, June 1994.
- Organizer of the session "Nonlinear dispersive wave equations: theory, computations and experiments" in the 14th IMACS World Congress, Georgia Tech., 11-15 July 1994.
- Member of the Advisory Editorial Board of the journal of the Hellenic Mathematical Society "Computer Mathematics and its Applications'" (1994-).

- Member of the Scientific Committee and session organizer, Hermis '96, Third Hellenic-Europe-an Conference on Mathematics and Informatics, Athens, 26-28 September 1996.
- Co-organizer (with A. S. Fokas) of the Euroconference in Mathematics on Crete, "Nonlinear dispersive waves: theory and applications ", Anogeia, Crete, 29 June-5 July 1997.
- Member of the Committee for the selection of the recipients of the University Teaching Prize in memory of St. Pichorides, University of Crete (1998-).
- Member of the Scientific Program Committee, IMACS International Conference on "Nonlinear Evolution Equations and Wave Phenomena:Computation and Theory ", Athens, Georgia, April 12-15, 1999.
- University Committee on Graduate Studies, Associate Member, Univ. of Athens (1999-).
- Principal investigator for the University of Athens in the EPEAEK program "Mathematics for 2001: Restructuring and upgrading of Mathematics Curricula in Greek Universities" (1998-2000).
- Co-organizer (with J. L. Bona and M. Chen) of the session "Nonlinear dispersive waves" in the 5th International Conference on Mathematical and Numerical Aspects of Wave Propagation, SIAM-INRIA, Santiago de Compostella, Spain, July 10-14, 2000.
- Member of Scientific Committee, 2nd IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena, Computation and Theory, Athens, Georgia, April 9-12, 2001.
- Member of the National Committee for the 6th National Congress on Mechanics, HSTAM, Thessaloniki, Greece, July 19-21, 2001.
- Member of the Committee for the selection of the recipients of the Distinguished University Teaching Prize in memory of V. Xanthopoulos and St. Pnevmatikos (2001-).
- Member of the Scientific Committee and speaker in HERCMA 2001, 5th Hellenic-European Conference on Research on Computer Mathematics and its Applications, Athens, September 20-22, 2001.
- Member of the University of Athens working group on the evaluation of Greek Universities (2001).
- Member of the Scientific Committee of the graduate program in Applied Mathematics of the Department of Mathematics of the University of Athens (2002 -).
- Principal investigator of the project (2nd EPEAEK) "Revision of the undergraduate program of studies of the Department of Mathematics of the University of Athens (2002 -).
- Co-organizer (with J. L. Bona and M. Chen) of the session "Nonlinear waves in fluid mechanics" in the 3rd IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computations and Theory, Athens, Georgia, April 7-10, 2003.
- Member of the Scientific and the Organizing Committee of the Graduate Summer School "Waves and Patterns", University of Athens, June 9-20, 2003.
- Member of the International Jury Committee, 45th International Mathematical Olympiad, Athens, July 4-18, 2004.
- Member of the Organizing Committee, 2nd Workshop on Numerical Methods for Evolution Equations, IACM-FORTH, Heraklion, Crete, September 24-25, 2004.
- Member of the Organizing Committee, Conference in Applied Mathematics honouring J. Papadakis, IACM-FORTH, Heraklion, Crete, November 4-6, 2004.
- Member of the Scientific Committee of the "Fourth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computations and Theory" and Co-organizer (with J.L. Bona, M. Chen and G. Iooss) of the session "Modeling and Analysis of Nonlinear Waves" in the same conference, Athens, Georgia, April 11-14, 2005.
- Co-organizer (with J.L. Bona and J.-C. Saut) of the Marie Curie Conference "Nonlinear Dispersive Wave Phenomena", Anogeia, Crete, July 9-15, 2005.

- Member of the Organizing Committee of the "International Conference on Modern Mathematical Methods in Science and Technology", Paros, Greece, September 7-9, 2006.
- Co-organizer (with V. Thomee and Ch. Makridakis) of the "Third Workshop on Numerical Methods for Evolution Equations", IACM-FORTH, Heraklion, Greece, September 22-23, 2006.
- Member of the Scientific Committee of the "Fifth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena. Computations and Theory", Athens, Georgia, April 16-19, 2007. Co-organizer (with J. L. Bona and M. Chen) of the special session "Nonlinear Waves" in the same conference.
- Member of the Scientific Committee of the "8th International Conference on Theoretical and Computational Acoustics-ICTCA 2007", Heraklion, Greece, July 2-5, 2007.
- Member of the Organizing Committee of the Summer School in Computational Fluid Dynamics, IACM-FORTH, Heraklion, Greece, July 9-14, 2007.

Recent Invited Talks
- 2003
  - Université Paris-Sud (Orsay), France, Dép. de Mathématiques, Nonlinear Partial Differential Equations Seminar and Seminar of the Numerical Analysis Working Group (Febr. 2003).
  - 3rd IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computations and Theory, Athens, Georgia, USA (Apr. 2003).
- 2004
  - Conference on "Mathematical Modelling in the Sciences and Technology", Univ. of the Aegean, Samos, Greece (Apr. 2004)
  - 2nd Workshop on Numerical Methods for Evolution Equations, IACM-FORTH, Heraklion, Greece (Sept. 2004)
  - Conference in Applied Mathematics honoring J. Papadakis, IACM-FORTH, Heraklion, Greece (Nov. 2004)
- 2005
  - 4th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computations and Theory, Athens, Georgia, USA (Apr. 2005)
  - Conference in Numerical Analysis honouring A. Hadjidimos, Univ. of Ioannina, Greece (June 2005)
  - Conference on "Contemporary Developments in Mathematics", Univ. of Patras, Greece (June 2005)
  - Nonlinear Dispersive Wave Phenomena, Current Trends in Mathematics Conference Series, Anogeia, Greece (July 2005)
- 2006
  - 8th European Conference on Underwater Acoustics, Carvoeiro, Portugal (June 2006)
  - AIMS 6th International Conference on Dynamical Systems, Differential Equations and Applications, Poitiers, France (June 2006)
  - International Conference on Modern Mathematical Methods in Science and Technology, Paros, Greece (September 2006)
  - 1st Greek-French Workshop on Computational Aspects of Acoustic Propagation, IACM-FORTH, Heraklion, Greece (September 2006)
- 2007
  - 5th IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computations and Theory, Athens, Georgia, USA (April 2007)
  - University of Tennessee, Knoxville, Mathematics Department Seminar (April 2007)

- Dispersive models and Fluid Dynamics, a conference in honour of J.-C. Saut, Universite Paris, 11, Orsay, France (Sept. 2007)
- Workshop on dispersive long waves models: Control theory and boundary value problems, Wolfgang Pauli Institut, Vienna (Oct. 2007)

Doctoral Students
- Ch. Makridakis (Ph.D. 1989, University of Crete) Galerkin finite element methods for the equations of Elastodynamics.
- N. A. Kampanis (Ph.D. 1992, University of Crete) Galerkin-finite element methods for interface problems in Underwater Acoustics.
- B. Pelloni (Ph.D. 1996, Yale University) Spectral methods for the numerical solution of nonlinear, dispersive wave equations.
- D. C. Antonopoulos (Ph.D. 2000, University of Athens) Systems of Boussinesq equations: Theory and Numerical Analysis.
- D. A. Mitsoudis (Ph.D. 2003, University of Athens) Finite element methods for axisymmetric indefinite boundary value problems and applications to underwater acoustics.
- D.K. Antonopoulou (Ph.D. 2006, University of Athens) Theory and numerical analysis of Parabolic Approximations
- D.E. Mitsotakis (Ph.D. 2007, University of Athens) Theory and numerical analysis of nonlinear dispersive wave equations: Boussinesq systems in one and two space dimensions
- Ch.A. Sfyrakis (Ph.D. 2008, University of Athens) Mathematical and numerical models for materials phase change problems

Master's Students
Supervisor in 20 Master's Theses.

Published Papers
- (1975a) (with G. Birkhoff) Numerical solution of hydrodynamic problems, in *Advances in Computer Methods for Partial Differential Equations I*, ed. by R. Vichnevetsky, AICA, pp. 46-52.
- (1975b) (with G. Birkhoff) A comparison of numerical methods for solving wave equations, in *Proceedings of the First International Conference on Numerical Ship Hydrodynamics*, ed. by J. W. Schot and N. Salvesen, NSRDC, pp. 231-251.
- (1976) (with G. A. Baker) The effect of quadrature errors on finite element approximations for second-order hyperbolic equations, *SIAM J. Numer. Anal.*, 13, pp. 577-598.
- (1979) Multistep-Galerkin methods for hyperbolic equations, *Math. Comp.*, 33, pp. 563-584.
- (1979) (with G. A. Baker and S. M. Serbin) High-order accurate two-step approximations for hyperbolic equations, *RAIRO Analyse Numèrique*, 13, pp. 201-226.
- (1979) (with S. M. Serbin) Two-step high-order accurate full discretizations of second-order hyperbolic equations, in *Advances in Computer Methods for Partial Differential Equations III*, ed. by R. Vichnevetsky and R. S. Stepleman, IMACS, pp. 214-220.
- (1980) (with G. A. Baker) On the L^∞-convergence of Galerkin approximations for second-order hyperbolic equations, *Math. Comp.*, 34, pp. 401-424.
- (1980) (with G. A. Baker and O. A. Karakashian) On multistep-Galerkin discretizations of semilinear hyperbolic and parabolic equations, *Nonl. Anal.*, 4, pp. 579-597.
- (1980a) (with S. M. Serbin) On the superconvergence of Galerkin methods to second-order hyperbolic equations, *SIAM J. Numer. Anal.*, 15, pp. 431-446.

- (1980) (with G. A. Baker and S.M. Serbin) An approximation theorem for second-order evolution equations, *Numer. Math.*, 35, pp. 127-142.
- (1980) (with J. L. Bona), An initial-and boundary-value problem for a model equation for propagation of long waves, *J. Math. Anal. and Applics.*, 75, pp. 503-522.
- (1980b) (with S. M. Serbin) Some remarks on a class of rational approximations to the cosine, *BIT*, 20, pp. 204-211.
- (1981a) (with S. M. Serbin) On the efficiency of some fully discrete Galerkin methods for second-order hyperbolic equations, *Comp. And Maths. with Appls.*, 7, pp. 261-279.
- (1981b) (with S. M. Serbin) Higher-order time-stepping methods for second-order nonlinear systems of ordinary differential equations, in *Advances in Computer Methods for Partial Differential Equations IV*, ed. by R. Vichnevetsky and R. S. Stepleman, IMACS, pp. 269-273.
- (1981) (with I. Vardoulakis) On surface waves in a Gibson half-space, in *Proceedings of the International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics*, ed. By S. Prakash, 1, pp. 557-559.
- (1982) (with S. M. Serbin) On some unconditionally stable higher-order methods for the numerical solution of the structural dynamics equations, *Int'l J. Num. Meth. Eng'g.*, 18, pp. 1613-1621.
- (1982) (with G. A. Baker and O. A. Karakashian) On a higher order accurate fully discrete Galerkin approximation to the Navier-Stokes equations, *Math. Comp.*, 39, pp. 339-375.
- (1982) (with C. Corduneanu) A semidiscretization procedure for the Fitzhugh-Nagumo equations, in *Nonlinear Phenomena in Mathematical Sciences*, ed. by V. Lakshmikantham, Academic Press, pp. 269-278.
- (1983) (with G. A. Baker and O. A. Karakashian) Convergence of Galerkin approximations for the Korteweg-de Vries equation, *Math. Comp.*, 40, pp. 419-433.
- (1984) (with L. A. Bales and S. M. Serbin) New aspects of cosine schemes for second-order hyperbolic equations, in *Advances in Computer Methods for Partial Differential Equations V*, ed. by R. Vichnevetsky and R. S. Stepleman, IMACS, pp. 540-545.
- (1985) (with O. A. Karakashian) On some high order accurate fully discrete Galerkin methods for the Korteweg-de Vries equation, *Math. Comp.*, 45, pp. 329-345.
- (1985) (with L. A. Bales and S. M. Serbin) Cosine methods for second-order hyperbolic equations with time-dependent coefficients, *Math. Comp.*, 45, pp. 65-89.
- (1985) Fully discrete Galerkin methods for nonlinear second-order hyperbolic equations, in *Proceedings of the 11th IMACS World Congress on System Simulation and Scientific Computation*, ed. by B. Wahlstrom et al, NFA, 5, pp. 369-371.
- (1986) (with J. L. Bona and O. A. Karakashian) Fully discrete Galerkin methods for the Korteweg-de Vries equation, *Comp. and Maths. with Appls.*, 12A, pp. 859-884.
- (1989) (with L. A. Bales) Cosine methods for nonlinear second-order hyperbolic equations, *Math. Comp.*, 52, pp. 229-319, S15-S33.
- (1989) (with G. D. Akrivis) On high-order accurate Galerkin-type full discretization of the Schrödinger equation, in *Proceedings of the 9th Conference on Problems and Methods of Mathematical Physics* (9.TMP), ed. by F. Kuhnert and B. Silberman, B. G. Teubner, Leipzig, pp. 19-26.
- (1990a) (with G. D. Akrivis) On a conservative, high-order accurate finite element scheme for the 'parabolic' equation, in *Computational Acoustics*, ed. by D. Lee, A. Cakmak, R. Vichnevetsky, Elsevier-North Holland, 1, pp.17-26.

− (1990b) (with G. D. Akrivis) Finite difference discretization with variable mesh of the Schrödinger equation in a variable domain, *Bull. Greek Math. Soc.*, 31, pp. 19-28.

− (1991a) (with G. D. Akrivis) Finite difference discretizations of some initial-and boundary-value problems with interface, *Math. Comp.*, 56, pp. 505-522.

− (1991b) (with G. D. Akrivis) On a class of conservative, highly accurate Galerkin methods for the Schrödinger equation, *RAIRO-MMAN*, 25, pp. 643-670.

− (1991) (with G. D. Akrivis and O. A. Karakashian) On fully discrete Galerkin methods of second-order temporal accuracy for the nonlinear Schrödinger equation, *Num. Math.*, 59, pp. 31-53.

− (1991) (with J. L. Bona, O. A. Karakashian and W. R. McKinney) Fully discrete methods with grid refinement for the generalized Korteweg-de Vries equation, in *Viscous profiles and numerical methods for shock waves*, ed. by M. Shearer, SIAM, pp. 1-11.

− (1992a) (with J. L. Bona, O. A. Karakashian and W. R. McKinney) Computations of blow-up and decay for periodic solutions of the generalized Korteweg-de Vries-Burgers equation, *Appl. Numer. Math.*, 10, pp. 335-355.

− (1992b) (with J. L. Bona, O. A. Karakashian and W. R. McKinney) Numerical approximation of blow-up and decay of solutions of the generalized Korteweg-de Vries-Burgers equation, in *Proceedings of the ERCIM Workshop on numerical methods for linear and nonlinear problems in wave propagation*, FORTH, Heraklion, pp. 69-78.

− (1992a) (with G. D. Akrivis and N. A. Kampanis) Finite element methods for parabolic and wide-angle equations in Underwater Acoustics, in *Proceedings of the ERCIM Workshop on numerical methods for linear and nonlinear problems in wave propagation*, FORTH, Heraklion, pp. 112-122.

− (1992c) (with J. L. Bona, O. A. Karakashian and W. R. McKinney) Numerical solution of the Generalized Korteweg-de Vries-Burgers equation with adaptive Galerkin methods, in *Proceedings, First National Congress on Computational Mechanics*, ed. by D. E. Beskos, University of Patras Press, 1, pp. 220-228.

− (1992b) (with G. D. Akrivis and N. A. Kampanis) On finite element methods for interface problems in underwater acoustics, in *Proceedings, First National Congress on Computational Mechanics*, ed. by D. E. Beskos, University of Patras Press, 2, pp. 863-870.

− (1992) (with G. D. Akrivis and O. A. Karakashian) Numerical methods for the Nonlinear Schrödinger Equation, in *Advances in computer methods for partial differential equations VII*, ed. by R. Vichnevetsky, D. Knight, and G. Richter, IMACS, pp. 1-7.

− (1992c) (with G. D. Akrivis and N. A. Kampanis) On finite element approximations of the wide-angle parabolic equation, in *Advances in computer methods for partial differential equations VII*, ed. by R. Vichnevetsky, D. Knight, and G. Richter, IMACS, pp. 8-14.

− (1992) (with G. D. Akrivis, O. A. Karakashian and W. R. McKinney) Galerkin-finite element methods for the Nonlinear Schrödinger Equation, in *Hellenic Research in Mathematics and Informatics'92*, ed. by E. A. Lipitakis, Hellenic Mathematical Society, pp. 421-442. Also in *Advances on Computer Mathematics and its Applications*, ed. by E. Lipitakis, World Scientific, Singapore 1993, pp. 85-106.

− (1993a) (with G. D. Akrivis) On a conservative finite difference method for the third-order, wide-angle parabolic equation, in *Computational Acoustics: Acoustic Propagation*, ed. by D. Lee, R. Vichnevetsky and A. R. Robinson, North-Holland, 2, pp. 209-220.

− (1993) (with G. D. Akrivis and O. A. Karakashian) On optimal-order error estimates for the nonlinear Schrödinger equation, *SIAM J. Numer. Anal.*, 30, pp. 377-400.

- (1993b) (with G. D. Akrivis) Translation in Greek of "Computer methods for mathematical computations", by G. E. Forsythe, M. A. Malcolm and C. B. Moler (Prentice-Hall 1977), University of Crete Press, Heraklion.
- (1993c) (with G. D. Akrivis) Analysis of numerical methods for the parabolic and the wide angle equations, Lecture Notes, Advanced Course on Acoustical Oceanography, MAST-IACM/FORTH, Heraklion, June 1993.
- (1994a) (with G. D. Akrivis and N. A. Kampanis) On Galerkin methods for the wide-angle parabolic equation, *J. Comput. Acoustics*, 2, pp. 99-112.
- (1994) (with N. A. Kampanis and E. A. Vavalis) An efficient finite element method for the PE, *Proceedings of the 2nd European Conference on Underwater Acoustics*, ed. L. Bjorno, European Commission, Luxemburg 1994, vol. 1, pp. 363-368.
- (1994b) (with G. D. Akrivis and N. A. Kampanis) Error estimates for finite element methods for a wide-angle parabolic equation, *Appl. Numer. Math.*, 16, pp. 81-100.
- (1995) (with J. L. Bona, O. A. Karakashian and W.R. McKinney) Conservative, high-order numerical schemes for the generalized Korteweg-de Vries equation, *Phil. Trans. Roy. Soc. London, A* 351, pp. 107-164.
- (1996) (with N. A. Kampanis) Finite element methods for the Parabolic Equation with interfaces, *J. Comput. Acoustics*, 4, pp. 55-88.
- (1996) (with E. T. Flouri, N. A. Kampanis, and J. S. Papadakis) A 3D parabolic equation model with an impedance bottom boundary condition, *Proceedings of the 3rd European Conference on Underwater Acoustics*, ed. J. S. Papadakis, FORTH-IACM, Heraklion 1996, vol. 1, pp. 231-236.
- (1996) (with N. A. Kampanis, P. E. Tsompanopoulou and E. A. Vavalis) Linear system solvers of finite element discretizations of the Helmholtz equation, *Proceedings of the 3rd European Conference on Underwater Acoustics*, ed. J. S. Papadakis, FORTH-IACM, Heraklion 1996, vol. 1, pp. 279-284.
- (1996a) (with J. L. Bona, O. A. Karakashian, and W. R. McKinney) Numerical simulation of singular solutions of the generalized Korteweg-de Vries equation, *Contemporary Mathematics*, 200, pp. 17-29.
- (1996) (with G. D. Akrivis and G. E. Zouraris) Error estimates for finite difference methods for a wide-angle 'parabolic' equation, *SIAM J. Numer. Anal.*, 33, pp. 2488-2509.
- (1996b) (with J. L. Bona, O. A. Karakashian and W. R. McKinney) The effect of dissipation on solutions of the generalized Korteweg-de Vries equation, *J. Comp. & Appl. Math.*, 74, pp. 127-154.
- (1996) (with B. Pelloni) On spectral methods for the Benjamin-Ono equation, in *HERMIS'96, Proceedings of the 3rd Hellenic-European Conference on Mathematics and Informatics*, ed. by E. Lipitakis, Athens 1996, pp. 229-237.
- (1997) (with G. D. Akrivis) Introduction to Numerical Analysis, University of Crete Press, Heraklion. (In Greek. Second Edition, 2004)
- (1997) (with G. D. Akrivis and O. A. Karakashian) Solving the systems of equations arising in the discretization of some nonlinear p.d.e.'s by implicit Runge-Kutta methods, *RAIRO-MMAN*, 31, pp. 251-288.
- (1998) (with D. C. Antonopoulos) Galerkin methods for the Bona-Smith version of the Boussinesq equations, in *Proceedings of the 5th National Congress on Mechanics*, ed. by P. S. Theocaris, D. I. Fotiadis and C. V. Massalas, University of Ioannina, Ioannina 1998, pp. 1001-1008.

– (1998a) (with N. A. Kampanis) Finite element methods coupled with nonlocal boundary conditions in underwater acoustics, in Proceedings of the Conference "Modelisation mathematique et numerique dans les Sciences de l' Ingenieur", Beirut, Apr. 1997, *Lebanese Scientific Research Reports, 3* (1998), pp. 293-306.

– (1998b) (with N. A. Kampanis) On finite element approximations of the Helmholtz equation in axisymmetric, unbounded waveguides with interfaces, in *Proceedings of the 5th National Congress on Mechanics*, ed. by P. S. Theocaris, D. I. Fotiadis and C. V. Massalas, University of Ioannina, Ioannina 1998, pp. 1009-1015.

– (1998) (with N. A. Kampanis and M. I. Taroudakis) Comparison of finite element and coupled mode solutions of the Helmholtz equation in Underwater Acoustics, in *Proceedings of the 4th European Conference on Underwater Acoustics*, ed. by A. Alippi and G. B. Cannelli, CNR-IDAC, Rome 1998, pp. 643-654.

– (1998) (with J. S. Papadakis, et al.}) Ocean acoustic models for low frequency propagation in 2D and 3D environments, *ACUSTICA*, 84, pp. 1031-1041.

– (1998) (with E. T. Flouri and N. A. Kampanis) A finite element method for the Helmholtz equation in Underwater Acoustics, in *Mathematical and Numerical Aspects of Wave Propagation*, ed. by J. DeSanto, SIAM, Philadelphia 1998, pp. 585-587.

– (1998) (with G. D. Akrivis, O. A. Karakashian and W. R. McKinney) Numerical approximation of singular solutions of the damped nonlinear Schrödinger equation, in *ENUMATH'97*, ed. by H. G. Bock et al., World Scientific, Singapore 1998, pp. 117-124.

– (1999) (with N. A. Kampanis) Finite element solution of the Helmholtz equation in axially symmetric layered fluid waveguides, in *Theoretical and Computational Acoustics '97*, ed. by Y.-C. Teng et al., World Scientific, Singapore 1999, pp. 405-417.

– (1999a) (with N. A. Kampanis) On finite element approximations of the Helmholtz equation in axisymmetric, unbounded waveguides with interfaces, *J. Comp. Acoustics.*, 7, pp. 83-110.

– (2000) (with B. Pelloni) Numerical solution of some nonlocal, nonlinear, dispersive wave equations, *J. Nonlin. Science*, 10, pp. 1-22.

– (2000) (with D. C. Antonopoulos) Numerical approximations of Boussinesq systems, in *Proceedings of the 5th International Conference on Mathematical and Numerical Aspects of Wave Propagation*, ed. by A. Bermudez et al., SIAM, Philadelphia 2000, pp. 265-269.

– (2001a) (with B. Pelloni) Numerical modelling of two-way propagation of nonlinear dispersive waves, *J. Math. and Computers in Simulation*, 55, pp. 595-606.

– (2001b) (with B. Pelloni) Error estimates for a fully discrete spectral scheme for a class of nonlinear nonlocal dispersive wave equations, *Appl. Numer. Math.*, 37, pp. 95-107.

– (2001) (with G. D. Akrivis and G. E. Zouraris) Finite difference schemes for the 'parabolic' equation in a variable depth environment with a rigid bottom boundary condition, *SIAM J. Numer. Anal.*, 39, pp. 539-565.

– (2002) (with D. A. Mitsoudis and N. A. Kampanis) A finite element method for the Helmholtz equation in axially symmetric problems of underwater acoustics: error estimates and numerical experiments, in *HERCMA 2001, Proceedings of the 5th Hellenic-European Conference on Computer Mathematics and its Applications*, ed. by E. Lipitakis, Athens 2002, vol. 2, pp. 530-533.

– (2002) (with G. A. Athanassoulis, K. A. Belibassakis, N. A. Kampanis and D. A. Mitsoudis) Simulation of underwater sound propagation in a general stratified environment by a coupled mode and a finite element method, in *the Proceedings of the Forum Acusticum Sevilla 2002*

Conference, ed. by A. Calvo-Manzano et al., special issue of Revista de Acustica, vol. 33 (2002).

– (2002) (with D. A. Mitsoudis and I. G. Stratis) Translation in Greek of "Applied Mathematics", by J. D. Logan (2nd ed., John Wiley, 1996), University of Crete Press, Heraklion.

– (2003) (with G. D. Akrivis, O. A. Karakashian and W.R. McKinney) Numerical approximation of blow-up of radially symmetric solutions of the nonlinear Schrödinger equation, *SIAM J. of Scientific Computing*, 25, pp. 186-212.

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Papers at Press and Manuscripts Submitted for Publication

- (with G.A. Athanassoulis, K.A. Belibassakis, D.A. Mitsoudis and N.A. Kampanis) Coupled mode and finite element approximations of underwater sound propagation problems in general stratified environments. (To appear in *J. Computational Acoustics*).

- (with D. Mitsotakis and J.-C. Saut) On initial-boundary value problems for a Boussinesq system of BBM-BBM type in a plane domain (to appear in *J. of Discrete and Continuous Dynamical Systems*)
- (with J.D. Bona and D.E. Mitsotakis) Numerical solution of KDV-KDV systems of Boussinesq euations: II. Generation and evolution of radiating solitary waves (submitted)
- (with D.E. Mitsotakis) Theory and numerical analysis of Boussinesq systems: A review (to appear in *Effective Computational Methods in Wave Propagation*, CRC Press 2008)
- (with D.E. Mitsotakis and N.A. Kampanis) Finite element discretization of the Helmholtz equation in an underwater acoustic waveguide (*ibid*)
- (with N.A. Kampanis, F. Sturm and G.E. Zouraris) Numerical solution of the Parabolic Equation in range-dependent waveguides (*ibid*)
- (with D.C. Antonopoulou and G.E. Zouraris) Finite element discretizations of the 'Parabolic' Equation in an underwater variable bottom environment (submitted)
- (with D.C. Antonopoulou and G.E. Zouraris) A finite element method for the 'Parabolic' Equation in a range-dependent environment with a rigid bottom (to appear in the Proceedings of ICTCA 2007)
- (with F. Sturm and G.E. Zouraris) On an initial-boundary value problem for a wide-angle parabolic equation in a waveguide with a variable bottom (submitted)

Unpublished Reports and Lecture Notes
– (1976) High order fully discrete Galerkin approximations to hyperbolic equations, Ph.D. Thesis, Harvard University, (Advisor: Prof. Garrett Birkhoff).
– (1978) Finite difference methods for the numerical solution of partial differential equations (Lecture notes for a graduate level course, University of Tennessee).
– (1978) Finite element methods for the numerical solution of partial differential equations (Lecture notes for a graduate level course, University of Tennessee, University of Crete; revised 1985, National Technical University; revised 1995, University of Athens; revised 1996).
– (1980) (with M. D. Gunzburger) Lecture Notes in Numerical Analysis (Lecture notes for a graduate level course, University of Tennessee).
– (1983) Lecture Notes for Numerical Analysis II (In Greek; University of Crete).
– (1984) Lecture Notes for Numerical Analysis I (In Greek; University of Crete).
– (1986) Lecture Notes on computer solutions of linear systems of equations (In Greek; University of Crete).
– (1987) Numerical solution of the generalized Korteweg-de Vries equation (In Greek; Proceedings of the 1st Mathematics Conference, University of Athens, Sept. 1987).
– (1987) Numerical Analysis (In Greek; Lecture notes for a graduate level course, University of Crete).
– (1990) Lecture Notes for Mathematical Models of Classical Physics (in Greek; University of Crete, University of Athens, revised, 2000).
– (1991) (with G. D. Akrivis and N. Kampanis) Efficient finite element methods for problems with interfaces in Underwater Acoustics (Invited paper in the 13th IMACS World Congress, Dublin, July 1991).
– (1997) (with G. D. Akrivis) Numerical methods for differential equations. (In Greek; Lecture notes), Athens-Ioannina.
– (1999) (with A. Hadjidimos, P. Noutsos and E. Vavalis) Numerical Linear Algebra. (In Greek; Lecture Notes), Ioannina.

Work on Research and Development Grants (last 10 years)

- Principal Investigator of the project "Numerical solution of the Helmholtz Equation with finite element methods – Applications to Underwater Acoustics" (GSRT), 1996-98, 8 mil. drs.
- Principal Investigator of the project "NUSE: Numerical methods and information systems for preventing eutrophisation in water", Greek-French joint research and technology program (PLATON), 1998-99, 3.7 mil. drs.
- Principal Investigator of the project "3D Parabolic Equation models for sound propagation in underwater acoustics", Greek-French joint research and technology program, 2003-05, 12.4 k€.
- Principal Investigator in one internal research project funded by the Research Committee of the National Technical University of Athens (1994-95) and in six internal research projects funded by the Research Committee of the University of Athens (1997-2005).
- Principal Investigator (for the University of Athens) of the project "Mathematics for 2001: Revising and Upgrading the undergraduate curriculum in Mathematics in Greek Universities" (joint EPEAEK I project of the Universities of Athens, Crete and Ioannina), 1998-2000, 47 mil. drs.
- Principal Investigator of the project "Revision of the undergraduate program of studies of the Department of Mathematics of the University of Athens" (EPEAEK II project), 2002-2008, 238.9 k€.
- Senior Investigator in research projects of the IACM-FORTH such as:
  - "Development of solution methods of direct and inverse wave propagation problems in marine environments" (GSRT Joint research grant IACM-NTUA-Univ. of Patras).
  - PROMODE, Ocean Acoustic Propagation Modelling, MAST2, 1993-96.
  - CRUCID, Modélisation numérique des crues via le calcul intensif distribue, ESPRIT/INCO-DC, 1998-2000.
  - SIMO, An information system for the numerical simulation and forecasting of floods, PLATON, 2000-01.
  - SIGMA, Sediment identification for geotechnics by marine acoustics, MAST3, 1998-2001.
  - MCWAVE, Modelling and Computations in Wave Propagation, Human Potential (FPS), (2002-2005)
- Senior Investigator in the project "Development of the graduate program in Applied Mathematics of the Department of Mathematics of the University of Athens" (EPEAEK II project), 2002-2004 .
- Principal Investigator of the PYTHAGORAS I research program "Numerical Solution of P.D.E's and mathematical models in Science and Technology", (EPEAEK II), 2004-07, 80 k€.
- Principal Investigator of the Project "Computational methods for the numerical solution of P.D.E.'s of scientific and technological interest", Greek-Spanish joint research and technology program, GSRT, 2005-07, 10,4 k€.
- Senior Investigator in the Project "TRANSFER: Tsunami Risk and Strategies for the European Region", FP6 STREP Contract No. 037058, IACM-FORTH.
- Principal Investigator of the Project "Analysis and Numerical Methods for Linear and Nonlinear Wave problems", Greek-French joint research and technology program, GSRT, 2006-2008, 12,4 k€.