

# CURRICULUM VITAE

**PROF. O. ALP EDEN**

## EDUCATION

1989 Indiana University, Bloomington, USA, Ph.D.

1981 Boğaziçi University, Istanbul, TURKEY, B.S. in Civil Engineering and B.A. in Mathematics.

## AREAS OF INTEREST

Non-linear Partial Differential Equations, Dynamical Systems, Finance Mathematics, Mathematical Modelling.

## HONORS AND AWARDS

Robert E. Weber Memorial Prize, 1982.

Swain Fellowship, 1983.

Indiana University Research Fellowship, 1984, 1985, 1987.

Sloan Foundation Fellowship for Ph. D., 1987-1988.

TÜBİTAK Science Award for Young Scientists, 1995.

Boğaziçi University Award for Excellence in Research, 1998.

## ACADEMIC POSITIONS

Researcher, *Indiana University Scientific and Computational Mathematics Research Institute*, 1988-1989.

Assistant Professor, *Arizona State University*, USA, 1989-1992.

Associate Professor, *Boğaziçi University*, 1993-1999.

Visiting Professor, *Université de Poitiers*, FRANCE, Summer 1997, 2000.

Professor and Chair, *Boğaziçi University, Mathematics Department*, 1999-01.

Vice-Dean, *Faculty of Arts and Sciences, Boğaziçi University*, 2002-04.

Acting Chair, *Program in Financial Engineering, Boğaziçi University*, 2005-6.

Researcher, *Feza Gürsey Institute for Basic Sciences*, 1997-8, 2001-2, 2005-

## PUBLICATIONS

### BOOKS

*Exponential Attractors for Dissipative Evolution Equations* (with C. Foias, B. Nicolaenko and R. Temam), 1994, Paris, *Masson Publications*.

*Proceedings of the Workshop on Turbulence Modelling and Vortex Dynamics* (co-editors: A. Erzan and O. Boratav), 1997, *Springer-Verlag*, Lecture Notes in Physics.

### ARTICLES

- 1) “Local Lyapunov exponents and a local estimate of Hausdorff dimension”, *Attractors, inertial manifolds and their approximation* (Marseille-Luminy, 1987). *RAIRO Modél. Math. Anal. Numér.* **23** (1989), no. 3, 405--413.
- 2) “Explicit Dimension estimates of Attractors for the MHD equations in three dimensional space” *Physica D*, **40**, 338-352, 1989. (with A. Libin)
- 3) “Local estimates for the Hausdorff dimension of an attractor”, *J. Math. Anal. Appl.* **150** (1990), no. 1, 100—119.
- 4) “On Burgers’ original Mathematical model of Turbulence”, *Nonlinearity*, **3**, 557-566, 1990.
- 5) “Ensembles inertiels pour des equations d’evolution dissipative”, *C.R. Acad. Sci. Paris*, **310**, Series I, 559-562, 1990. (with C.Foias, B. Nicolaenko and R. Temam)
- 6) “Error analysis of nonlinear evolution equations and associated dynamical systems”, *Appl. Math. Lett.* **3** (1990), no. 3, 31--34. (with Michaux, B.; Rakotoson, J.-M.)
- 7) “Semi-discretized non-linear evolution equations as discrete dynamical systems and error analysis”, *Indiana Journal of Mathematics*, **39**, 737-783, 1990. (with B. Michaux and J.M. Rakatoson)
- 8) “A simple proof of the generalized Lieb-Thirring inequalities in one-space dimension”, *J. Math. Anal. Appl.* **162** (1991), no. 1, 250--254. (with Foias, C.)
- 9) “Doubly nonlinear parabolic type equations as dynamical systems” *Journal of Dynamics and Differential Equations*, **3**, 87-131, 1991. (with B. Michaux and J.M. Rakatoson)
- 10) “Local and Global Lyapunov Exponents ”, *Journal of Dynamics and Differential Equations*, **3**, 133-177, 1991. (with C.Foias and R. Temam)

- 11) "Finite-dimensional exponential attractors for semilinear wave equations with damping", (with [Milani, A. J.](#); [Nicolaenko, B.](#)) *J. Math. Anal. Appl.* **169** (1992), no. 2, 408--419.
- 12) "Exponential attractors and their relevance to fluid dynamics systems", *Physica D*, **63**, 350-360, 1993. (with C. Foias, B. Nicolaenko and Z-S. She)
- 13) "Local exponential attractors for models of phase change for compressible gas dynamics", *Nonlinearity*, **6**, 93-117, 1993. (with A.J. Milani and B. Nicolaenko)
- 14) "Hölder continuity for the inverse of Mané's projection", *Journal of Mathematical Analysis and its Applications*, **178**, 1, 22-29, 1993. (with A. Ben-Artzi, C. Foias and B. Nicolaenko)
- 15) "Exponential Attractors of Optimal Lyapunov dimension for Navier-Stokes equations", *Journal of Dynamics and Differential Equations*, **6**, 2, 310-323, 1994. (with C. Foias and B. Nicolaenko)
- 16) "Exponential attractors for a doubly nonlinear equation", *J. Math. Anal. Appl.* **185** (1994), no. 2, 321--339. (with [Rakotoson, J.M.](#))
- 17) "On the convergence of attractors and exponential attractors for singularly perturbed hyperbolic equations", *Turkish J. Math.* **19** (1995), no. 1, 102--117. (with A.J. Milani)
- 18) "Finite dimensional attractors for a class of semilinear wave equations", *Turkish Mathematical Journal*, **20**, 3, 425-450, 1996. (with V. Kalantarov)
- 19) "A remark on two constructions of exponential attractors for  $\alpha$ -contractions", *Journal of Dynamics and Differential Equations*, **10**, 1, 37-45, 1998. (with C. Foias and V. Kalantarov)
- 20) "On the discrete squeezing property for semilinear wave equations", *Turkish J. Math.* **22** (1998), no. 3, 335--341. (with [Kalantarov, V. K.](#))
- 21) "Finite dimensional attractors for a general class of non-autonomous wave equations", *Applied Mathematics Letters*, **13**, 17-22, 2000. (with V. Kalantarov and A. Miranville)
- 22) "On the asymptotic stability of positive maps on homogeneous lattices", *Turkish Mathematical Journal*, **24**, 3, 277-281, 2000.
- 23) "Finite Dimensional Dynamics on the Attractors", in *Proceedings of the Third International Palestinian Conference in Mathematics and Mathematics Education*, editors: S. Elaydi, E.S.Titi, M. Saleh, S.K. Jain and R. Abu-Saris, World Scientific, 90-97, 2002.
- 24) "On travelling wave solutions of a generalized Davey-Stewartson system", *IMA Journal of Applied Mathematics*, **70**, 15-24, 2005. (with S. Erbay)

- 25) “Global existence and non-existence results for a generalized Davey-Stewartson system”, *Journal of Physics A : Mathematics and General*, **37**, 11531-11546, 2004. (with C. Babaoğlu and S. Erbay)
- 26) “On global behaviour of solutions to an inverse problem for semilinear parabolic equations”, *Journal of Mathematical Analysis and its Applications*, **307**, 120-133, 2005. (with V. Kalantarov)
- 27) “On global behaviour of solutions to an inverse problem for semi-linear hyperbolic equations”, *Zapiskii Nauchix Seminarov POMI*, **318**, 120-133, 2004. (with V. Kalantarov)
- 28) “Two remarks on a generalized Davey-Stewartson system”, *Nonlinear Analysis*, **64**, 979-986, 2006. (with H. A. Erbay and G. M. Muslu)
- 29) “On the Global Behaviour of Solutions to Nonlinear Inverse Source problems” to appear in *the Proceedings of the Conference on Differential&Difference Equations and Applications*, p. 1-12, 2006. ( with V. Kalantarov)
- 30) “ On Convective Cahn-Hilliard Equation”, *Applied Mathematics Letters*, 20 (2007) 455-461 (with V. Kalantarov)
- 31) “ Standing Waves for a Generalized Davey-Stewartson system” *Journal of Physics A: Mathematics and General*, 39 (2006) 13435-13444 (with S. Erbay)
- 32) “ Reducing a generalized Davey-Stewartson system to a non-local nonlinear Schrödinger equation” *accepted in Chaos, Solitons and Fractals* (with S. Erbay and I. Hacinliyan)
- 33) “3D Convective Cahn-Hilliard equation” *Communications on Pure and Applied Analysis*, 6, no.4, December 2007. (with V. Kalantarov)
- 34) “A global existence result for small mass solutions for GDS system”, *submitted* (with I. Hacinliyan)
- 35) “Closing the gap in the purely elliptic GDS system” *Nonlinear Analysis: Theory, Methods and Applications*, 69, 2575-2581, 2008. ( with H.A. Erbay and G. Muslu)
- 36) “Standing waves for a Generalized Davey-Stewartson equation: Revisited” *Applied Mathematics Letters*, 21,342-347, 2008. ( with I. A. Topaloglu)
- 37) “On Almost Cubic NLS equations: Existence, Uniqueness and Scattering”, *accepted to CPAA*, (with E. Kuz)
- 38) “On the focusing and defocusing cases of the purely elliptic GDS system”, *accepted to IMA Journal on Applied Mathematics* , (with E. Kuz and B. Gurel)

39) “On the special solutions of the Generalized Davey-Stewartson system”,  
*accepted to Applied Mathematics Letters* (with B. Gurel).

## **OTHER PUBLICATIONS**

- 1) “ On Attractors and Exponential Attractors for some Nonlinear Wave equations with Damping”, VII. Ulusal Matematik Sempozyumu Bildiri Kitabı, 27-40, 1994. (with V. Kalantarov)
- 2) “ Katastrof ve Kaos Teorileri hakkında”, Matematik Dünyası, 6-11, 1994. (in Turkish)
- 3) “Doğru bir Boyut Kavramına Doğru”, XI. Ulusal Matematik Sempozyumu Bildiri Kitabı, 1-12, 1998. (in Turkish)
- 4) “Genelleştirilmiş Davey-Stewartson Sistemi için iki yeni sonuç”, itüdergisi/c, 2007. ( Gülçin M. Muslu ve Hüsnü A. Erbay ile birlikte) (in Turkish)
- 5) “ Zürich İzlenimleri” , Matematik Dünyası, 2007. (in Turkish)
- 6) “Some results on coupled linear wave equations”, PAMM, Proc. Appl. Math. Mech., 7, 2040013-2040014, doi: 10.1002/pamm.200700291 (with Saadet Erbay and İrma Hacinliyan)

## **REFEREE FOR JOURNALS**

*Nonlinearity*

*Inverse Problems*

*Journal of Mathematical Physics*

*Discrete and Continuous Dynamical Systems*

*Journal of Physics A: Mathematics and General*

*Differential Equations and Non-linear Mechanics*

*Communications of Mathematical Physics*

*Journal of Mathematical Analysis and Applications*

***Turkish Journal of Mathematics (Editor-in-Chief starting from 2009)***

*Journal of Physics D: Applied Physics*

*The European Physical Journal*

*Journal of London Mathematical Society*

*SIAP*

*Mathematical Analysis and Geometry*

*Zeitschrift für Analysis und ihre Anwendungen*

*Physics Letters A*

*Differential Equations and Non-linear Mechanics*

*Journal of Applied Mathematics*

*Applicable Analysis*

## **MASTER AND PH D STUDENTS**

Coşkun Çetin, MA 2000, “ *Comparison Theorems for Stochastic Differential Equations and their applications* ”

Nusret Balcı, MA 2002, “ *Takeya Problem in d-dimension* ”

Serdar Altok, MA 2002, “ *Calculus on Fractals* ”

Betül Orçan, MA 2005, “ *Some Fixed Point Theorems with some applications to Differential equations* ”

Gökhan Yıldırım, MA 2006, “ *Integration of the deterministic functions with respect to Fractional Brownian Motion* ”

Sadık Görkem Özkaya, MA 2006, “ *Irregular Sampling in Shift-Invariant Spaces* ”

Elif Kuz, MA 2008, “ *Davey-Stewartson Equation Generalized: Existence, Uniqueness and Scattering Theory* ”, continuing

İhsan Ata Topaloğlu, MA 2007 , “ *Solutions of non-local semilinear elliptic problems with variational methods* ”

Ersin Karabudak, Ph. D , “ *Analysis of Seismic Data with Wavelet methods* ”, continuing

Harun Özkan, MA, “ *Computational Aspects of Jump-Diffusion Models in Finance* ”, continuing

Deniz Bilman, MA, “ *On a class of Zakharov-Schulman equations* ”, continuing

Seçkin Demirbaş, MA, “ *Regularity and global existence of rough solutions for ACNLS equations* ”, continuing

Ümit Işlak, MA, “ *Propp-Wilson algorithm and beyond* ”, continuing

## **CONFERENCES AND RESEARCH SEMESTERS ORGANIZED**

*Workshop on Non-linear Partial Differential Equations and Dynamical Systems*, Theoretical Physics and Applied Mathematics Research Institute, Trakya University, Edirne, TURKEY, February 22-28, 1994.

*Workshop on some aspects of the theory of non-linear partial differential equations*, Theoretical Physics and Applied Mathematics Research Institute, Trakya University, Edirne, TURKEY, June 11-18, 1994.

*Non-linear Partial Differential Equations of Mathematical Physics*, Theoretical Physics and Applied Mathematics Research Institute, Trakya University, Edirne, TURKEY, 1995.

*Workshop on Interpolation of Spaces and Operators*, Middle-Eastern Technical University, May 1995.

*Non-linear Partial Differential Equations of Mathematical Physics II*, , Middle-Eastern Technical University, September 14-18, 1995.

*Workshop on Turbulence Modelling and Vortex Dynamics*, Istanbul Technical University, September 2-6, 1996.

Research Semester on the Interface Dynamics and Non-equilibrium Phase Transitions, Feza Gursey Institute, Istanbul, February-June 1998.

*Workshop on the Interface Dynamics and Non-equilibrium Phase Transitions*, Istanbul Technical University, April 16-18, 1998.

Research Semester on the Qualitative Theory on Non-linear Partial Differential Equations, Feza Gursey Institute, Istanbul, TURKEY, February-June 2001.

*Workshop on Differential Equations and its Applications*, Istanbul Technical University, Istanbul, TURKEY, September 2000.

*Workshop on Differential Equations and its Applications II*, Istanbul Technical University, Istanbul, TURKEY, September 2002.

*Workshop on Differential Equations and its Applications III*, Istanbul Technical University, Istanbul, TURKEY, 15-17 September 2004.

*Talking Freely, A Conference Honoring the 80th Birthday of Prof. John Freely*, Bogazici University, Istanbul, TURKEY, June 25, 2006.

*Workshop on Nonlinear Schrödinger Equations*, Bogazici University, Istanbul, TURKEY, 13-15 September 2006.

*Nonlinear Dispersive Equations*, IMBM, Bogazici University, Istanbul, TURKEY, 25-28 August 2008.

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