



**Ayhan, Aydın, Ph.D.**

**Professor**

Atılım University

Department of Mathematics

06830 İncek, Gölbaşı, Ankara/TURKEY

Ayhan.aydin@atilim.edu.tr

Tel: +90 312 586 8645

## PERSONAL

<b>Date of Birth</b>	20.03.1972
<b>Place of Birth</b>	Ankara

## EDUCATION

1998-2005	Middle East Technical University(METU), Mathematics, Ph.D.
1995-1998	Middle East Technical University(METU), Mathematics, M.S.
1991-1995	Middle East Technical University(METU), Mathematics, B.S.

## ACADEMIC POSITIONS

<b>June/2018</b>	Prof.Dr., Department of Mathematics, Atılım University, Turkey
<b>October/2012</b>	Assoc.Prof.Dr., Department of Mathematics, Atılım University, Turkey
<b>September/2006</b>	Assist.Prof.Dr., Department of Mathematics, Atılım University, Turkey
<b>September/2005</b>	Instructor (Dr.),Department of Mathematics, Atılım University, Turkey
<b>September/2001</b>	Instructor (Dr.),Department of Mathematics, Atılım University, Turkey
<b>August/1996</b>	Instructor, Department of Mathematics, Kırıkkale University, Turkey.

## ADMINISTRATIVE DUTIES

<b>Feb/2006- Mar/2009</b>	Co-head of Mathematics Department , Atılım University
-------------------------------	---

## RESEARCH INTERESTS

<b>1</b>	Numerical solutions of ODE
<b>2</b>	Numerical solutions of PDE
<b>3</b>	Geometric integrators
<b>4</b>	Exact and nonstandard finite difference scheme
<b>5</b>	Discontinuous Galerkin Method

## PUBLICATIONS

1	A.Aydn, B.Karasözen, Symplectic and multi-symplectic methods for coupled nonlinear Schrödinger equations with periodic solutions, <i>Computer Physics Communications</i> 177(7), 566-583 2007.
2	A.Aydn, B.Karasözen, Symplectic and multisymplectic Lobatto methods for the “good” Boussinesq equation, <i>Journal of Mathematical Physics</i> 49(8), 083509(18 pages) (2008).
3	Ayhan Aydn and Bülent Karasözen, Multi-symplectic integration of coupled non-linear Schrödinger system with soliton solutions, <i>International Journal of Computer Mathematics</i> , 86(5), 864-882 (2009).
4	Ayhan Aydn, Multisymplectic integration of N-coupled nonlinear Schrödinger equation with destabilized periodic wave solutions, <i>Chaos Solitons &amp; Fractals</i> 41(2), 735-751 (2009).
5	A.Aydn and B.Karasözen, Multisymplectic box schemes for the complex modified Korteweg-de Vries equation, <i>Journal of Mathematical Physics</i> 51(8), 083511 (2010).
6	A.Aydn, B.Karasözen, Lobatto IIIA-IIIB Discretization of the strongly coupled nonlinear Schrödinger equation, <i>Journal of Computational and Applied Mathematics</i> , 235, 4770-4779, (2011).
7	Ayhan Aydn and Gusein Sh. Guseinov, Inverse spectral problem for finite Jacobi matrices with zero diagonal, <i>INVERSE PROBLEMS IN SCIENCE AND ENGINEERING</i> 23(8), 1267-1282 (2015).
8	Ayhan Aydn, Mohammad S Ismail, and Khalil S Al-Basyouni, Conservative finite difference schemes for the chiral nonlinear Schrödinger equation, <i>Boundary Value Problems</i> , 89( 14 pages), (2015).
9	A.Aydn, C.Koroglu, A Nonstandard Numerical Method for the Modified KdV Equation, <i>Pramana J.of Physics, Pramana – J. Phys</i> , 89:72, 2017
10	Canan Koroglu, Ayhan Aydn, An unconventional finite difference scheme for modified Korteweg de Vries equation, <i>Advances in Mathematical Physics</i> , Volume 2017, Article ID 4796070, 9 pages, 2017
11	A.Aydn, "Lie-Poisson Integrators for a Rigid Satellite on a Circular Orbit", <i>TWMS J. App. Eng. Math</i> , 1(2), 150-161, 2011.
12	S.Ertuğ, A.Aydn (2017), Conservative schemes for three coupled nonlinear Schrödinger equation, <a href="#">Applied Mathematical and Computational Sciences</a> , Volume 8, Issue 2, 43-66, 2016
13	A. Aydn, An Unconventional Splitting for Korteweg de Vries–Burgers Equation, <i>European Journal of Pure and Applied Mathematics</i> , 8(1), 50-63, 2015
14	A. Aydn, B. Karasözen, Semi-Explicit Multi-symplectic Integration of Nonlinear Schrodinger Equation, Further Progress in Analysis, Proceeding of the sixth International ISAAC Congress 13-18 August, 2007, editors H.G.W. Begehr, A.O.Celebi, R.P.Gilbert, pp. 717-726, 2009
15	A.Aydn and B.Karasözen, Multisymplectic Schemes for the Complex Modified Korteweg-de Vries Equation, <i>International Conference on Numerical Analysis and Applied Mathematics, American Institute of Physics Conference Proceedings</i> , 1048, 60-63 (2008).
16	Aydn A., Karasözen B., Operator Splitting of the KdV-Burgers Type Equation with Fast and Slow Dynamics, " <i>ICMS: INTERNATIONAL CONFERENCE ON MATHEMATICAL SCIENCE - AIP Conference Proceedings</i> ", 1309, pp.562-566, (2010),
17	B.Karasözen, A. Aydn, Chapter 3 - Multisymplectic Integrators for Coupled Nonlinear Partial Differential Equations (pp.267-296), Series: Computer Science and Robotics, Book: Computer Physics, Editors: Brian S. Doherty and Amy N. Molloy, Nova Science Publishers (2012) ( <a href="https://www.novapublishers.com/catalog/product_info.php?cPath=23_50&amp;products_id=21011">https://www.novapublishers.com/catalog/product_info.php?cPath=23_50&amp;products_id=21011</a> )
18	A.Aydn, Lineer olmayan ikili Schrödinger denkleminin çoklu-simplektik yapısı ve Preissman yöntemi, <i>Y.Y.Ü. Fen Bilimleri Enstitüsü Dergisi, XVI. Ulusal Matematik Sempozyumu</i> , 263-275 (2005)

19	A.Aydın ve B.Karasözen, Soliton çözümlü lineer olmayan ikili Schrödinger denkleminin çoklu simplektik sayısal yöntemlerle çözümü, Dumpupınar Üniversitesi XIX Ulusal Matematik Sempozyumu Bildiri Kitabı, 98-108 (2006)
20	E. Kara, C. Köroğlu, A. Aydın, Birinci mertebeden üç sabit noktalı lineer olmayan adi türevli diferansiyel denklemler için standart olmayan sonlu fark yöntemleri, 14. Matematik Sempozyumu, 14-16 Mayıs 2015 Niğde Üniversitesi, Bildiriler Kitabı. S.170-173

## PROJECTS

1	<p><b>Project Type:</b> Tübitak 3001  <b>Project No:</b> 114F020  <b>Project team members :</b>  <b>Project Coordinator:</b> Doç.Dr.Ayhan Aydın  <b>Scholarship Students in the Project :</b> Sevim Ertuğ (Atılım Univ. Mathematics Dept., Graduate Students)  <b>Project Title:</b> Lineer Olmayan Üçlü Schrödinger Denklemi İçin Yapı Koruyan Sayısal Yöntemler  <b>Start/End:</b> 01/06/2014 - 01/06/2016 (24 months)  <b>Budget:</b> 30150 \$ (63350 TL)</p>
---	--

## CONFERENCE PRESENTATIONS

1	Author(s), Title of the presentation, Title of the conference, Country, Year
1	Bülent Karasözen, A. Aydın, Symplectic and multi-symplectic Lobatto methods for the "good" Boussinesq equation. ISAAC(International Society for Analysis, its Applications and Computation),11-24 August 2007,Ankara", , (2007), p.101
2	Ayhan Aydın, Bülent Karasözen, Lobatto IIIA-III B Discretization for the Strongly Coupled Nonlinear Schrödinger Equation, , "23rd Biennial Numerical Conference, ", UnitedKingdom, University of Strathclyde Glasgow, Scotland, 23-26 June, 2009, p.28
3	A. Aydın, B. Karasözen, Lobatto IIIA – IIIB discretization of strongly coupled nonlinear Schrödinger equation. "14th International Conference on Computational and Applied Mathematics, 28 September -2 October", (2009), p.81. Antalya, Turkey
4	Canan Akkoyunlu, Ayhan Aydın, Bülent Karasözen,, Energy Preserving Integration of the Zakharov System. "International Conference on Applied Analysis and Algebra, 29-30 June, 1-2 July, Yıldız Üniversitesi", (2011), s.181.
5	Görkem Şimşek, Ayhan Aydın, Bülent Karasözen, Energy preserving methods for KdV type equations."International Conference on Applied Analysis and Algebra, 29-30 June, 1-2 July, Yıldız Üniversitesi", (2011), s.156.
6	C. Köroğlu, A. Aydın, Nonstandart discretization for the Huxley equation, 3rd International Eurasian Conference on Mathematical Sciences and Applications (IECMSA-2014) , Viyana, 2014, p:166
7	A.Aydın, S. Ertuğ, Numerical simulation of three coupled nonlinear Schrödinger equation while preserving energy and mass, International Conference on Mathematical Analysis, Differential Equations and Their Applications (MADEA-7), Azerbaycan, Bakü, 08.09.2015, p:51
8	A.Aydın, S. Ertuğ, Conservative schemes for 3-coupled nonlinear Schrödinger equation, WORKSHOP ON NUMERICAL SOLUTIONS OF THE NONLINEAR PDEs, Turkey, İzmir, 26.06.2015

9	A. Aydın, Multisymplectic splitting schmes fort he complex modified Korteweg de Vries equation, Workshop on Geometric Integration, Izmir Institute of Technology Department of Mathematics, Turkey, Izmir, July 25, 2008
10	A. Aydın, S. Ertuğ , Energy conservation for the 3-coupled nonlinear Schr ödinger equation by using the Average Vector Field method, INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN PURE AND APPLIED MATHEMATICS(ICRAPAM) 2014, Turkey,Antalya, p.102
11	A. Aydın, S. Ertuğ , A conservative two-step scheme for 3-coupled nonlinear Schrödinger equation, 2nd INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN PURE AND APPLIED MATHEMATICS(ICRAPAM) 2015, Turkey, Istanbul, 03.06.2015.p.144
12	A.Aydın, S. Ertuğ , Dispersive properties of conservative schemes for three coupled nonlinear Schrödinger equation, , INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN PURE AND APPLIED MATHEMATICS(ICRAPAM) May 2016, Turkey, Bodrum, p.80
13	M. Özhavzali, <b>A.Aydın</b> , A comparison for some linear positive operators by calculating the errors in the approximation, The 12 <sup>th</sup> International Conference on Approximation Theory and its Applications, ICATA-2016,Romanya, 26-29 May 2016, Abstract book p.21
14	M. Özhavzali, <b>A.Aydın</b> , An application for certain generalized Bernstein operators in the approximation theory, International Conference on Mathematics and Engineering, 10-12 May 2017, Istanbul, Turkey Abstract book p.75
15	M. Özhavzali, <b>A.Aydın</b> , International Conference on “Operators in Morrey-Type Spaces and Applications”, OMTSA-2017, Kırşehir, Turkey. Abstract book p.21
16	A.Aydın, A convergent two-level linear scheme for the Generalized Rosenau- KdV-RLWeqution, 4th INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN PURE AND APPLIED MATHEMATICS (ICRAPAM 2017), Aydın, Turkey, 2017, Abstract book p.48
17	A. Aydın, A new structure-preserving method for PDEs in multi-symplectic form, 10th Workshop: Structural Dynamical Systems: Computational Aspects SDS2018, Hotel Porto Giardino Resort Capitolo-Monopoli, Bari, Italy, 12-15 June 2018 Abstract book p.15.
18	A.Aydın and B.Karasözen, Semi-Explicit Symplectic and multi-symplectic six-point schemes for Coupled Nonlinear Schrödinger Equations XX.Ulusal Matematik Sempozyumu 3-6 Eylül 2007, Atatürk University, Erzurum. S.20
19	Ayhan Aydın, Özge Erdem, Bülent Karasözen, Operator Splitting for the KdV-Burgers Type Equations, 23.Ulusal Matematik Sempozyumu, 4-7 Ağustos 2010 Erciyes Üniversitesi, Kayseri, S.149.
20	Ayhan Aydın, İkili Korteweg-De Vries Denkleminin Çoklu Simplektik Yöntemlerle Sayısal Çözümü, 25.Ulusal Matematik Sempozyumu, 2012, Niğde , s.103
21	A. Aydın, S. Ertuğ , Üçlü lineer olmayan Schrödinger denklemi için yapı koruyan iki adımlı sonlu fark yöntemi, 10. Ankara Matematik Günleri, ODTÜ, Ankara, 11.06.2015, S.56
22	A.Aydın, Fisher denklemi için sömürmeli sayısal bir yöntem, 29. 30. Ulusal Matematik Sempozyumu, Mersin Üniversitesi, 28-31 Ağustos, 2016, Mersin, Bildiri Özetleri Kitabı, s.24.

23	C.Koroglu, A.Aydin, Modifiye Korteweg-de Vries denklemi için standart olmayan bir sonlu fark tasarısı, 30. Ulusal Matematik Sempozyumu, Atılım Üniversitesi, 6-9-Eylül, 2017, Ankara, Bildiri Özetleri Kitabı, s.49.
----	--

## CITATIONS

Sum of times cited without self-citations (ISI Web of Science):	59 (5.7.2018)
H-index (ISI Web of Science):	5 (5.7.2018)

## COURSES GIVEN

1	MATH101 Introduction to Calculus ( Management Faculty)
2	MATH102 Calculus for Mgmt and Econ. Students (Management Faculty)
3	MATH108 Temel Matematik (Faculty of architecture, design and fine arts)
4	MATH135 Mathematical Analysis I (Mathematics Department)
5	MATH136 Mathematical Analysis II (Mathematics Department)
6	MATH151 Calculus I (Engineering Faculty)
7	MATH152 Calculus II (Engineering Faculty)
8	MATH157 Extended Calculus I (Engineering Faculty)
9	MATH158 Extended Calculus II (Engineering Faculty )
10	MATH274 Complex Variables and Applications (Engineering Faculty)
11	MATH275 Linear Algebra (Engineering Faculty)
12	MATH276 Ordinary Differential Equation (Engineering Faculty)
13	MATH380 Numerical Methods for Engineers (Engineering Faculty)
14	MATH381 Numerical Analysis I (Mathematics Department)
15	MATH411 Seminar Studies (Mathematics Department)
16	MATH521 Numerical Analysis I (Mathematics Department)
17	MATH522 Numerical Analysis II (Mathematics Department)
18	MATH524 Finite Difference Methods for Partial Differential Equations (Mathematics Department)
19	MDES620 Numerical Solutions of Differential Equations ( <i>Modeling and Design of Engineering Systems-MODES Program</i> )
20	MDES621 Numerical Linear Algebra ( <i>Modeling and Design of Engineering Systems - MODES Program</i> )

## THESES SUPERVISED

1	MS Thesis , Sevim Ertuğ, Conservative Schemes for the three coupled nonlinear Schrödinger equation (Supported by Tübitak: Tübitak project no: 114F020), Mathematics Department, Faculty of Art Sciences, Atılım University, 25.01.2016
2	MS Thesis, Salim Mahmood Yaseen Al-Omairi, A conservative and Linearized Schemes for Rosenau-Korteweg de Vries - Regularized Long Wave equation, Mathematics Department, Faculty of Art Sciences, Atılım University, 13.07.2015
3	MS Thesis (Co-Advisor) Görkem Şimşek, Energy Preserving Methods for Korteweg de Vries Type Equations, <a href="#">Institute of Applied Mathematics</a> , Middle East Technical University,(2011).
4	MS Thesis (Co-Advisor), Erdi Kara, Solution of differential equations using nonstandard finite difference methods, Institute of Art Sciences, Hacettepe University, (2015)
5	MS Thesis (Co-Advisor), Fathia Omar, Numerical solutions of partial differential equations arising in finance, Institute of Art Sciences, Atılım University (2017).

**Graduate Thesis/Supervisor:** Poisson Integrators for Completely Integrable Hamiltonian Systems, Prof.Dr.Bülent Karasözen, 1998

**Ph.D. Thesis/Supervisor :** Geometric Integrators for the Coupled Nonlinear Schrödinger Equations, Prof.Dr.Bülent Karasözen, 2005

### **Lecture Notes on Internet (Distance Education-Online Documentation)**

**11** Ahmet Yasar Özban, Erdal Karapınar, Turan Aral, Ayhan Aydın, Tuncay Başkaya, Tanıl Ergenc, Uzaktan Eğitim Ders Notları: Matematik II, , (2009)

**12.** Ayhan Aydın, Fatih Sulak, Ferihe Atalan, Tuncay Başkaya, Umit Aksoy, MATH151-MATH157 Moodle Ders notları - 2013

**13.** Ayhan Aydın, Tuncay Başkaya, Tanıl Ergenc, Fatih Sulak, Bengisen Pakmen, MATH152-MATH158 Moodle Ders notları – 2014.