

Cihan BAYINDIR

Assistant. Prof. Dr. at Işık University, Şile, İstanbul, Turkey
Email: cihan.bayindir@isikun.edu.tr
Phone: (+90 216) 528 71 24

Last Update On: 25 December 2016

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PERSONAL

Date of Birth and Place: 21 June 1984, İstanbul, Turkey
Nationality: Turkish
Marital Status: Single
Military Service: Completed in Turkish Army in 2011.

EDUCATION

Ph.D., January 2012-February 2013 (1 year 2 months)
Georgia Institute of Technology, Atlanta, GA, USA
Concentration: Fluid Mechanics, Ocean Engineering, Radar Imaging
Minor: Electrical & Computer Engineering
Minor: Mathematics
Coursework: CE 6821 Coastal Hydrodynamics, CE 6251 Fluid Mechanics, CE 8900 Special Problems (2), (and all listed below)

M.S., Electrical & Computer Engineering, October 2009-December 2011 (2 years 2 months)

Georgia Institute of Technology, Atlanta, GA, USA
Concentration: Radar Imaging
Minor: Mathematics
Minor: Mechanical Engineering
Coursework: ECE 7142 Fault Tolerant Computing, ECE 8803 Power System Economics, MATH 6701 Applied Engineering Mathematics, ECE 6258 Digital Image Processing, ECE 6500 Fourier Analysis and Signal Techniques, ECE 6520 Integrated Optics, ECE 6272 Fundamentals of Radar Signal Processing, ECE 6282 Synthetic Aperture Radar Imaging, ME 7764 Acoustic Propagation in Fluids, MATH 6321 Complex Analysis, ECE 6501 Fourier Optics & Holography, ECE 6276 DSP Hardware System Design, ME 6449 Transducers & Signals, ECE 8001 Research Seminar

M.S., Ocean Engineering, August 2007-October 2009 (2 years 2 months)

University of Delaware, Newark, DE, USA
Minor: Mathematics
Coursework: CIEG 639 Ocean Fluid Dynamics, CIEG 684 Numerical Methods, CIEG 672 Linear Water Wave Mechanics, CIEG 872 Advanced Water Wave Mechanics, CIEG 679 Sediment Transport, MEEG 690 Intermediate Engineering Mathematics, MEEG 891 Advanced Engineering Mathematics, MATH 401 Real Analysis, MATH 835 Partial Differential Equations I, MATH 836 Partial Differential Equations II, CIEG 871 Coastal Structures, CIEG 870 Offshore Design, CIEG 682 Nearshore Hydrodynamics, CISC 372 Parallel Programming, CIEG 865 Coastal Engineering Seminar (3)

M.S., Civil Engineering, transferred to UD, January 2007-August 2007 (8 months)
Boğaziçi University, İstanbul, Turkey
Coursework: CE 601 Finite Elements I, CE 505 Applied Stochastic Analysis and

Modeling, CE 503 Mathematical Methods in Engineering

B.S., Civil Engineering, September 2002-January 2007 (4 years 4 months)

Boğaziçi University, İstanbul, Turkey

Rank: Honors Certificate

High School, Özel Kültür Fen Lisesi, İstanbul, Turkey

September 2001-September 2002 (1 year)

High School, İstanbul Atatürk Fen Lisesi, İstanbul, Turkey

September 1999-September 2001 (2 years)

ACADEMIC & EXPERIENCE

Researcher 2017-
Researcher contributing the Future Circular Collider (FCC) project at CERN, Geneva, Switzerland.

Assistant. Prof. Dr. 2013-
Işık University, İstanbul, Turkey

Research and Teaching Assistant 2009-2013
Georgia Institute of Technology, Georgia, USA

- Worked for a synthetic aperture radar imaging project supported by the Georgia Institute of Technology.

Research Assistant 2007-2009
University of Delaware, Delaware, USA

- Worked for an underwater acoustics project supported by the U.S. Office of Naval Research.

Research Assistant 2006-2007
Boğaziçi University, İstanbul, Turkey

- Worked for a beach nourishment design project funded by Capital Partners.

Volunteer Teacher 2003-2004
Boğaziçi University, İstanbul, Turkey

RESEARCH INTERESTS

Computational Mathematics, Fluid Mechanics, Nonlinear Wave Propagation, Synthetic Aperture Radar and Synthetic Aperture Sonar Algorithms, Underwater Acoustics, Parallel Programming

PUBLICATIONS Thesis

- Ph.D. Thesis: Enhancements to Synthetic Aperture Radar Chirp Waveforms and Non-Coherent SAR Change Detection Following Large Scale Disasters, Georgia Institute of Technology, 2013.
- M.S. Thesis: Implementation of a Computational Model For Random Directional Seas and Underwater Acoustics, University of Delaware, 2009.

Journal Papers/Preprints

- J1. Karjadi, E., Badiy, M., Kirby, J. T. and **Bayındır, C.**, 2012, "The effects of surface gravity waves on high frequency acoustic propagation in shallow water", IEEE Journal of Oceanic Engineering, vol. 37, no.1, pp. 112-121.

- J2. **Bayındır, C.**, 2015, “A novel nonlinear frequency modulated chirp signal for synthetic aperture radar and sonar imaging”, *Journal of Naval Science and Engineering*, vol. 11, no. 1, pp. 68-81.
- J3. Bayındır, A. and **Bayındır, C.**, 2015, “A translation on the reflections of ocean wave energy conversion technology in Turkey in the beginning of the XX. century”, *Studies in Ottoman Science*, 16 (2), 67-70. (In Turkish)
- J4. Demiray, H. and **Bayındır, C.**, 2015, “A note on the cylindrical solitary waves in an electron-acoustic plasma with vortex electron distribution”, *Physics of Plasmas*, 22, 092105.
- J5. **Bayındır, C.**, 2015, “Compressive split-step Fourier method”, *Turkic World Mathematical Society: Journal of Applied and Engineering Mathematics*, vol. 5, no. 2, 298-306. (arXiv preprint arXiv:1512.03932)
- J6. **Bayındır, C.**, 2015, “Compressive spectral method for the simulation of the water waves”, arXiv preprint arXiv:1512.06286.
- J7. **Bayındır, C.**, 2016, “Early detection of oceanic rogue waves using compressive sensing”, arXiv preprint arXiv:1602.00816.
- J8. **Bayındır, C.**, 2016, “Early detection of rogue waves by the wavelet transforms”, *Physics Letters A* (380), pp. 156-161. (arXiv preprint arXiv:1512.02583) (Most downloaded 15. article within 90 days).
- J9. **Bayındır, C.**, 2016, “Compressive spectral method for the simulation of the nonlinear gravity waves”, (Nature) *Scientific Reports*, 6, 22100.
- J10. **Bayındır, C.**, 2016, “Rogue waves of the Kundu-Eckhaus equation in a chaotic wave field”, *Physical Review E*, 93, 032201. (Selected to kaleidoscope for visual merits) (arXiv preprint arXiv:1601.00209)
- J11. **Bayındır, C.**, Frost, J. D. and Barnes, C. F. 2016, “Assessment and enhancement of synthetic aperture radar non-coherent change detection techniques following oil spills”, arXiv preprint arXiv:1604.00625.
- J12. **Bayındır, C.**, 2016, “Analytical and numerical aspects of the dissipative nonlinear Schrödinger equation”, *Turkic World Mathematical Society: Journal of Applied and Engineering Mathematics*, vol. 6, no. 1, pp.135-142.
- J13. **Bayındır, C.**, 2016, “Rogue wave spectra of the Kundu-Eckhaus equation”, *Physical Review E*, 93, 062215. (Selected to kaleidoscope for visual merits) (arXiv preprint arXiv:1604.08035)
- J14. **Bayındır, C.**, 2016, “Rogue wave functions due to noisy quantum tunneling potentials”, arXiv preprint arXiv:1604.06604.
- J15. **Bayındır, C.**, 2016, “Compressive spectral renormalization method”, arXiv preprint arXiv:1611.08551.

Conference Proceedings

- C1. Karjadi, E., Badiy, M., Kirby, J. T. and **Bayındır, C.**, 2010, “Impact of time-varying surface gravity waves on high frequency acoustic propagation in shallow water”, 159th ASA Meeting, Baltimore, USA.
- C2. **Bayındır, C.**, 2014, “Detection of the ocean oil spill by the synthetic aperture radar imagery change detection methods”, pp. 907-918 , *Proceedings of the Eighth National Coastal Engineering Symposium*, İstanbul, Turkey. (in Turkish)
- C3. **Bayındır, C.**, 2015, “Compressive Fourier spectral method for computational fluid mechanics studies”, XIXth National Mechanics Congress, KTU, Trabzon, Turkey. (in Turkish)

- C4. **Bayındır, C.**, 2015, “Comparison of the analytical and numerical solutions of the dissipative modified Korteweg-deVries equation”, XIXth National Mechanics Congress, KTU, Trabzon, Turkey. (in Turkish)
- C5. **Bayındır, C.**, 2015, “Fast simulation of the ocean waves by compressive Fourier spectral method”, XIXth National Mechanics Congress, KTU, Trabzon, Turkey. (in Turkish)
- C6. **Bayındır, C.**, 2016, “Rogue wavefunctions due to white-noised quantum tunneling potentials”, International Conference on Quantum Science and Applications, EOU, Eskişehir, Turkey.
- C7. **Bayındır, C.**, 2016, “Shapes and statistics of the rogue waves generated by chaotic ocean current”, 26th International Ocean and Polar Engineering Conference, Rhodes, Greece. (arXiv preprint arXiv:1512.03584)
- C8. **Bayındır, C.**, 2016, “An extended Kundu-Eckhaus equation for modeling dynamics of rogue waves in a chaotic wave-current field”, 12th International Congress on Advances in Civil Engineering, BU, İstanbul, Turkey. (arXiv preprint arXiv:1602.05339)
- C9. **Bayındır, C.**, 2016, “On the use of wavelet spectra for the early detection of freak waves”, 35th International Conference on Coastal Engineering, Antalya, Turkey.

Articles in Science Magazines

- M1. **Bayındır, C.**, 2011, “Solitary Waves in Mathematics, Physics and Engineering”, Bilim & Teknik , no. 518 (January), pp. 62-63. (In Turkish)
- M2. **Bayındır, C.**, 2011, “Rogue Waves”, Bilim & Teknik, no. 520 (March), pp. 54-55. (In Turkish)
- M3. **Bayındır, C.**, 2011, “Electromagnetic Waves for Monitoring the Oceans”, Bilim & Teknik, no. 526 (September), pp. 64-66. (In Turkish)
- M4. **Bayındır, C.**, 2013, “Flow Visualization Techniques”, Bilim & Teknik, no. 543 (February), pp. 66-70. (In Turkish)

Presentations-Invited Talks

- P1. **Bayındır, C.**, 09.05.2014, “What is Civil Engineering”, Dubai Starr Insurance Company Education Seminar, Işık University, İstanbul, Turkey.
- P2. **Bayındır, C.**, 06.11.2015, “Cylindrical solitary waves in an electron-acoustic plasma”, Koç University Mechanical Engineering, İstanbul, Turkey.
- P3. **Bayındır, C.**, 20.11.2015, “Early Detection of Rogue Waves”, İTÜ Mathematics, İstanbul, Turkey.

TEACHING EXPERIENCE

Assistant. Prof. Dr.
Işık University, İstanbul, Turkey

2013-

Graduate Courses:

- Special Topics: CE 585 Advanced Numerical Analysis (Spring 2017 [])
- CE 502 Advanced Dynamics (Fall 2016 [4 stds])

Undergraduate Courses:

- CE 490 Project (Fall 2015 [1gr (4 stds)], Spring 2016 [2 gr (3 stds)], Fall 2016 [2 gr (4 stds)])
- CE 422 Introduction to Computational Fluid Dynamics (Fall 2015 [2 stds-closed],)
- CE 421 Introduction to Coastal Engineering (Spring 2015 [14 stds])
- CE 332 Foundation Engineering (Spring 2014 [10 stds], Spring 2015 [27 stds], Spring 2016 [34 stds])
- CE 331 Soil Mechanics (Fall 2013 [7 stds], Fall 2014 [43 stds], Fall 2015 [36 stds],)
- CE 331-L Soil Mechanics Laboratory (Fall 2013 [7stds], Fall 2014 [43 stds], Fall 2015 [36 stds],)
- CE 323 Hydrology & Water Resources (Spring 2014 [10 stds], Spring 2015 [28 stds], Spring 2016 [51 stds], Spring 2017 [])
- CE 323T Hydrology & Water Resources-in Turkish (Spring 2016 [15 stds], Spring 2017 [])
- CE 321 Fluid Mechanics and Hydraulics (Fall 2014 [39 stds], Fall 2015 [54 stds], Fall 2016 [55 stds])
- CE 321T Fluid Mechanics and Hydraulics-in Turkish (Fall 2015 [54 stds], Fall 2016 [18 stds])
- CE 239 Earthworks (Fall 2013 [44 stds],)
- CE 204/ME 242 Dynamics (Spring 2014 [38 stds], Summer 2015 [11 stds], Summer 2016 [13 stds],)
- CE 201 Strength of Materials I (Summer 2015 [23 stds],)

Teaching Assistant

2009-2013

Georgia Institute of Technology, Georgia, USA

Undergraduate Courses:

- CEE 3000, Mathematics Review (Fall 2009 [40 stds])
- CEE 4225, Introduction to Coastal Engineering (Spring 2010 [40 stds])

Graduate Courses:

- Taught ECE 6501, Fourier Optics (Fall 2011 [15 stds])

ADVISING & COMMITTEE MEMBERSHIP EXPERIENCE

Ph.D. Committee Membership:

- Mahmut Bağcı (İTU Department of Mathematics), Fundamental Lattice Solitons in Davey-Stewartson Systems, 2016.
- İzzet Göksel, (İTU Department of Mathematics), ..., 2016

Ph.D. Students:

- None yet.

M.S. Students:

- None yet.

B.S. Projects:

- Structural design of a cantilever retaining wall under surcharge and earthquake loads, 4 students, Fall 2015.
- Offshore Dredging in the Southwestern Black Sea Şile Region, 2 students, Spring 2016.
- Beach Nourishment Design for the Şile Region, 1 student, Spring 2016.
- Assessment of Current Energy Potential of the İstanbul and Çanakkale Straits, 2 students, Fall 2016.
- İstanbul ve Çanakkale Boğazları Akıntı Enerjisi Potansiyelinin Değerlendirilmesi -(in Turkish), 2 students, Fall 2016.

EDITORIAL & REFERENCEING & ORGANIZATION EXPERIENCE Organizing and Scientific Committee Member of:

- Thirteenth International Conference on Vibration Problems (ICOVP-2017), Işık University 2017

Associate Editor of:

- Turkic World Mathematical Society Journal of Applied and Engineering Mathematics 2015-2015

Referee of:

- Turkic World Mathematical Society Journal of Applied and Engineering Mathematics 2015-
- Wave Motion, Elsevier 2016-
- European Physical Journal - Plus 2016-

PROJECTS

G1. **Title: Impact of oceanographic variability on acoustic communications**

Sponsor: U.S. Office of Naval Research MURI

Duration: August 2007-October 2009

Involvement: Research Assistant

G2. **Title: Enhancements to Synthetic Aperture Radar Chirp Waveforms and Non-Coherent SAR Change Detection Following Large Scale Disasters**

Sponsor: Georgia Institute of Technology

Duration: August 2009-February 2013

Involvement: Research Assistant

ADMINISTRATIVE EXPERIENCE Deputy Chair of the Civil Engineering, Işık University May-June 2014

OTHER CONTRIBUTIONS

H1. Founded the soil mechanics laboratory of the Işık University

H2. Turkish Mathematical Society Interactive Dictionary Terminologist

COMPUTER SKILLS

Operating Systems: Windows, Linux.

Programming: Matlab, Fortran77, C, C++, Visual C++, Catapult C, Visual Basic 6.0, OpenGL, Parallel Programming with MPICH-Fortran, MPICH-C, Spin.

Acoustics: Bellhop.

Finite Elements: Lusas, Ansys.

Other: MS Office, Latex, Mathtype, Autocad, HTML, Map Source, IdeCad Static, IdeCad Architectural, SAP 2000, Haested Methods, Weather Link, Talren, Plaxis, Power World Simulator.

LANGUAGES

Turkish: Native Language

English: Fluent[Toefl CBT: 267/300 TWE: 6.0/6.0 on June 2006]

German: Intermediate

Russian: Beginner

MEMBERSHIPS

IEEE

IEEE Oceanic Engineering Society

Turkish Chamber of Civil Engineers

Museum of Modern Art, New York

AWARDS & HONORS

2011: Scholarship for Ph.D. study in Electrical & Computer Engineering Department of the Georgia Institute of Technology (Declined in favor of Civil & Environmental Engineering Department)

2011: Selected to Golden Key International Honour Society (for Scholarly Ranking)

2010: Selected to Gamma Beta Phi Honor Society (for Scholarly Ranking)

2007: Scholarships for Ph.D. studies in the University of Florida and University of Texas at Austin (Declined in favor of University of Delaware)

2007-2007: Boğaziçi University Civil Engineering Research Scholarship, First Recipient
2007: Boğaziçi University Honors Certificate
2006: Selected as a Player to Turkish National American Football Team
2002-2006: Player of Boğaziçi Sultans American Football Team, First Official League Champions
2005: Boğaziçi University Volunteer Teacher's Certificate (awarded by the Dean of Education Faculty)
2002-2007: ÖSYM Tuition and Stipend for University Education

REFERENCES

1. **Prof. Dr. H. Turan Durgunoğlu**
Professor Emeritus of Civil Engineering
Boğaziçi University
Phone: +1 (0216) 430-0600
E-mail: durgunoglut@zetas.com.tr
2. **Prof. Dr. J. David Frost**
Professor of Civil and Environmental Engineering
Georgia Institute of Technology
Phone: +1 (912) 966-7948
E-mail: david.frost@ce.gatech.edu
3. **Assoc. Prof. Dr. Christopher F. Barnes**
Professor of Electrical and Computer Engineering
Georgia Institute of Technology
Phone: +1 (912) 966-7927
E-mail: chris.barnes@gatech.edu
4. **Prof. Dr. James T. Kirby**
Professor of Civil and Environmental Engineering
Professor of Marine Studies
University of Delaware
Phone: +1 (302) 831-2438
E-mail: kirby@udel.edu
5. **Prof. Dr. Levent Değertekin**
Professor of Microelectronics and Microsystems
Georgia Institute of Technology
Phone: +1 (404) 385-1357
E-mail: levent.degertekin@me.gatech.edu