Prof. Mehmet Onur Fen

Personal Information

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Biography

Mehmet Onur Fen received his B.S. degree in mathematics with a double major in physics from Middle East Technical University. He graduated from the mathematics Ph.D. program of the same university in September, 2013. He worked as a research assistant for six years at Middle East Technical University. Dr. Fen served as a postdoctoral researcher at Neuroscience Institute, Georgia State University, USA, between November 2014 and November 2015. He has been working in TED University since June 2016.

Education Information

Doctorate, Middle East Technical University, Graduate School Of Natural And Applied Sciences, Graduate School Of Natural And Applied Sciences, Turkey 2007 - 2013
Undergraduate, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Physics, Turkey 2004 - 2008
Undergraduate, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Mathematics, Turkey 2002 - 2007

Research Areas

Differential Equations, Dynamic Systems and Ergodic Theory, Functional Equations

Academic Titles / Tasks

Associate Professor, TED University, Faculty of Arts and Sciences, Mathematics, 2017 - Continues
Expert, Georgia State University, Neuroscience Institute, 2014 - Continues
Associate Professor, 2016 - 2017
Expert, Middle East Technical University, Fen-Edebiyat Fakültesi, Matematik Bölümü, 2014 - 2014
Research Assistant, Middle East Technical University, Fen-Edebiyat Fakültesi, Matematik Bölümü, 2007 - 2013

Courses

Postgraduate
Advanced Engineering Mathematics, Postgraduate, 2022 - 2023, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019
Undergraduate
Advanced Calculus I, Undergraduate, 2023 - 2024, 2022 - 2023, 2021 - 2022, 2020 - 2021
Multivariable Calculus, Undergraduate, 2023 - 2024, 2016 - 2017
Advanced Calculus I, Undergraduate, 2023 - 2024, 2022 - 2023, 2021 - 2022, 2020 - 2021
Real Analysis, Undergraduate, 2023 - 2024, 2022 - 2023, 2021 - 2022
Senior Project, Undergraduate, 2023 - 2024, 2022 - 2023
Complex Analysis, Undergraduate, 2023 - 2024, 2021 - 2022
Introduction to Functional Analysis, Undergraduate, 2023 - 2024, 2022 - 2023
Calculus I, Undergraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020
Lineer Algebra and Differential Equations, Undergraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2018 - 2019, 2016 - 2017
Vector and Complex Calculus, Undergraduate, 2019 - 2020, 2018 - 2019
Calculus of One Variable, Undergraduate, 2018 - 2019
Introduction to Calculus of One Variable, Undergraduate, 2017 - 2018
Introduction to Calculus of One Variable, Undergraduate, 2017 - 2018, 2016 - 2017
Linear Algebra, Undergraduate, 2017 - 2018
Introduction to Multivariable Calculus, Undergraduate, 2017 - 2018
Lineer Algebra and Differential Equations, Undergraduate, 2016 - 2017

Jury Memberships

September, 2019
August, 2019
January, 2019
January, 2019

Published journal articles indexed by SCI, SSCI, and AHCI

I. **Asymptotically unpredictable trajectories in semiflows**
Fen M. O., FEN F.
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION, vol.134, 2024 (SCI-Expanded)

II. **Unpredictability in Quasilinear Non-Autonomous Systems with Regular Moments of Impulses**
Fen M. O., Tokmak Fen F.
MEDITERRANEAN JOURNAL OF MATHEMATICS, vol.20, no.4, 2023 (SCI-Expanded)

III. **A novel criterion for unpredictable motions**
Fen F. T., Fen M. O., Akhmet M.
FILOMAT, vol.37, no.18, pp.6151-6160, 2023 (SCI-Expanded)

IV. **Quasilinear systems with unpredictable relay perturbations**
Fen M. O., FEN F.
TURKISH JOURNAL OF MATHEMATICS, vol.46, no.4, pp.1369-1383, 2022 (SCI-Expanded)

V. **Replication of Period-Doubling Route to Chaos in Coupled Systems with Delay**
Fen M. O., Fen F. T.
FILOMAT, vol.36, no.2, pp.599-613, 2022 (SCI-Expanded)

VI. **Unpredictable oscillations of SICNNs with delay**
Fen M. O., Fen F. T.

NEUROCOMPUTING, vol.464, pp.119-129, 2021 (SCI-Expanded)

VII. **Unpredictable Solutions of Linear Impulsive Systems**
AKHMET M., Tleubergenova M., Fen M. O., Nugayeva Z.
MATHEMATICS, vol.8, no.10, 2020 (SCI-Expanded)

VIII. **Generation of fractals as Duffing equation orbits**
AKHMET M., Fen M. O., Alejaily E. M.
CHAOS, vol.29, no.5, 2019 (SCI-Expanded)

IX. **Homoclinical Structure of Retarded SICNNs with Rectangular Input Currents**
Fen M. O., Fen F. T.
NEURAL PROCESSING LETTERS, vol.49, no.2, pp.521-538, 2019 (SCI-Expanded)

X. **Extension of sea surface temperature unpredictability**
AKHMET M., Fen M. O., Alejaily E. M.
OCEAN DYNAMICS, vol.69, no.2, pp.145-156, 2019 (SCI-Expanded)

XI. **Replication of period-doubling route to chaos in impulsive systems**
Fen M. O., Fen F. T.
ELECTRONIC JOURNAL OF QUALITATIVE THEORY OF DIFFERENTIAL EQUATIONS, vol.2019, no.58, pp.1-20, 2019
(SCI-Expanded)

XII. **Unpredictable solutions of linear differential and discrete equations**
AKHMET M., Fen M. O., Tleubergenova M., Zhamanshin A.
TURKISH JOURNAL OF MATHEMATICS, vol.43, no.5, pp.2377-2389, 2019 (SCI-Expanded)

XIII. **POINCARE CHAOS FOR A HYPERBOLIC QUASILINEAR SYSTEM**
AKHMET M., Fen M. O., Tleubergenova M., Zhamanshin A.
MISKOLC MATHEMATICAL NOTES, vol.20, no.1, pp.33-44, 2019 (SCI-Expanded)

XIV. **Non-autonomous equations with unpredictable solutions**
AKHMET M., Fen M. O.
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION, vol.59, pp.657-670, 2018 (SCI-
Expanded)

XV. **Perturbed Li-Yorke homoclinic chaos**
AKHMET M., Feckan M., Fen M. O., Kashkynbayev A.
ELECTRONIC JOURNAL OF QUALITATIVE THEORY OF DIFFERENTIAL EQUATIONS, vol.2018, no.75, pp.1-18, 2018
(SCI-Expanded)

XVI. **HOMOCLINIC AND HETEROCLINIC MOTIONS IN HYBRID SYSTEMS WITH IMPACTS**
Fen M. O., Fen F. T.
MATHEMATICA SLOVACA, vol.67, no.5, pp.1179-1188, 2017 (SCI-Expanded)

XVII. **Poincare chaos and unpredictable functions**
AKHMET M., Fen M. O.
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION, vol.48, pp.85-94, 2017 (SCI-
Expanded)

XVIII. **SICNNs with Li-Yorke chaotic outputs on a time scale**
Fen M. O., Fen F. T.
NEUROCOMPUTING, vol.237, pp.158-165, 2017 (SCI-Expanded)

XIX. **Persistence of chaos in coupled Lorenz systems**
Fen M. O.
CHAOS SOLITONS & FRACTALS, vol.95, pp.200-205, 2017 (SCI-Expanded)

XX. **Persistence of Li-Yorke chaos in systems with relay**
AKHMET M., Fen M. O., Kashkynbayev A.
ELECTRONIC JOURNAL OF QUALITATIVE THEORY OF DIFFERENTIAL EQUATIONS, vol.2017, no.72, pp.1-18, 2017
(SCI-Expanded)

XXI. **Existence of unpredictable solutions and chaos**
AKHMET M., Fen M. O.
TURKISH JOURNAL OF MATHEMATICS, vol.41, no.2, pp.254-266, 2017 (SCI-Expanded)

XXII. **Almost periodic solutions of retarded SICNNs with functional response on piecewise constant argument**
AKHMET M., Fen M. O., Kirane M.
NEURAL COMPUTING & APPLICATIONS, vol.27, no.8, pp.2483-2495, 2016 (SCI-Expanded)

XXIII. **Unpredictable points and chaos**
AKHMET M., Fen M. O.
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION, vol.40, pp.1-5, 2016 (SCI-Expanded)

XXIV. **Preface**
AKHMET M., Fen M. O.
Nonlinear Physical Science, vol.380, pp.1, 2016 (SCI-Expanded)

XXV. **IMPULSIVE SICNNS WITH CHAOTIC POSTSYNAPTIC CURRENTS**
Fen M. O., AKHMET M.
DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS-SERIES B, vol.21, no.4, pp.1119-1148, 2016 (SCI-Expanded)

XXVI. **Chaos Extension in Hyperbolic Systems**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.101-125, 2016 (SCI-Expanded)

XXVII. **Chaos Generation in Continuous/Discrete-Time Models**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.183-264, 2016 (SCI-Expanded)

XXVIII. **Entrainment by Chaos**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.127-156, 2016 (SCI-Expanded)

XXIX. **Chaos by Neural Networks**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.311-405, 2016 (SCI-Expanded)

XXX. **Spatiotemporal Chaos in Glow Discharge-Semiconductor Systems**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.441-457, 2016 (SCI-Expanded)

XXXI. **The Prevalence ofWeather Unpredictability**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.407-440, 2016 (SCI-Expanded)

XXXII. **Li-Yorke chaos generation by SICNNs with chaotic/almost periodic postsynaptic currents**
AKHMET M., Fen M. O., Kivilcim A.
NEUROCOMPUTING, vol.173, pp.580-594, 2016 (SCI-Expanded)

XXXIII. **Chaotification of Impulsive Systems**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.157-181, 2016 (SCI-Expanded)

XXXIV. **Economic Models with Exogenous Continuous/Discrete Shocks**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.265-310, 2016 (SCI-Expanded)

XXXV. **Replication of Chaos in Neural Networks, Economics and Physics Introduction**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.1-32, 2016 (SCI-Expanded)

XXXVI. **Replication of Continuous Chaos About Equilibria**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, pp.33-100, 2016 (SCI-Expanded)

XXXVII. **Replication of Chaos in Neural Networks, Economics and Physics Preface**
AKHMET M., Fen M. O.
REPLICATION OF CHAOS IN NEURAL NETWORKS, ECONOMICS AND PHYSICS, 2016 (SCI-Expanded)

XXXVIII. **Li-Yorke Chaos in Hybrid Systems on a Time Scale**
AKHMET M., Fen M. O.

INTERNATIONAL JOURNAL OF BIFURCATION AND CHAOS, vol.25, no.14, 2015 (SCI-Expanded)

XXXIX. **Extension of Lorenz Unpredictability**

AKHMET M., Fen M. O.

INTERNATIONAL JOURNAL OF BIFURCATION AND CHAOS, vol.25, no.10, 2015 (SCI-Expanded)

XL. **Attraction of Li-Yorke chaos by retarded SICNNs**

AKHMET M., Fen M. O.

NEUROCOMPUTING, vol.147, pp.330-342, 2015 (SCI-Expanded)

XLI. **Extension of spatiotemporal chaos in glow discharge-semiconductor systems**

AKHMET M., RAFATOV İ., Fen M. O.

CHAOS, vol.24, no.4, 2014 (SCI-Expanded)

XLII. **Generation of cyclic/toroidal chaos by Hopfield neural networks**

AKHMET M., Fen M. O.

NEUROCOMPUTING, vol.145, pp.230-239, 2014 (SCI-Expanded)

XLIII. **Chaos in economic models with exogenous shocks**

AKHMET M., Akhmetova Z., Fen M. O.

JOURNAL OF ECONOMIC BEHAVIOR & ORGANIZATION, vol.106, pp.95-108, 2014 (SSCI)

XLIV. **Chaotification of Impulsive Systems by Perturbations**

AKHMET M., Fen M. O.

INTERNATIONAL JOURNAL OF BIFURCATION AND CHAOS, vol.24, no.6, 2014 (SCI-Expanded)

XLV. **Entrainment by Chaos**

AKHMET M., Fen M. O.

JOURNAL OF NONLINEAR SCIENCE, vol.24, no.3, pp.411-439, 2014 (SCI-Expanded)

XLVI. **Replication of chaos**

AKHMET M., Fen M. O.

COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION, vol.18, no.10, pp.2626-2666, 2013 (SCI-Expanded)

XLVII. **Shunting inhibitory cellular neural networks with chaotic external inputs**

AKHMET M., Fen M. O.

CHAOS, vol.23, no.2, 2013 (SCI-Expanded)

XLVIII. **Chaotic period-doubling and OGY control for the forced Duffing equation**

AKHMET M., Fen M. O.

COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION, vol.17, no.4, pp.1929-1946, 2012 (SCI-Expanded)

Articles Published in Other Journals

I. **Generation of Synchronous Unpredictable Oscillations by Coupled Hopfield Neural Networks**
Fen M. O., FEN F.
JOURNAL OF APPLIED NONLINEAR DYNAMICS, vol.13, no.3, pp.591-602, 2024 (ESCI)

II. **Doubling the Lorenz Attractor via Coupling**
Fen M. O.
JOURNAL OF APPLIED NONLINEAR DYNAMICS, vol.12, no.2, pp.273-284, 2023 (ESCI)

III. **A Numerical Analysis of Poincare Chaos**
AKHMET M., Fen M. O., Tola A.
Discontinuity, Nonlinearity, and Complexity, vol.12, no.1, pp.183-195, 2023 (Scopus)

IV. **MODULO PERIODIC POISSON STABLE SOLUTIONS OF DYNAMIC EQUATIONS ON A TIME SCALE**
Tokmakfen F., Fen M. O.
COMMUNICATIONS FACULTY OF SCIENCES UNIVERSITY OF ANKARA-SERIES A1 MATHEMATICS AND STATISTICS, vol.72, no.4, pp.907-920, 2023 (ESCI)

V. **Strange Non-Chaotic Attractors with Unpredictable Trajectories**

Akhmet M., Fen M. O., Tola A.

Journal of Vibration Testing and System Dynamics, vol.6, no.3, pp.317-327, 2022 (Scopus)

VI. **Dynamics with Fractals**

AKHMET M., Fen M. O., Alejaily E. M.

Discontinuity, Nonlinearity, and Complexity, vol.10, no.2, pp.174-184, 2021 (Scopus)

VII. **Almost periodicity in chaos**

AKHMET M., Fen M. O.

Discontinuity, Nonlinearity, and Complexity, vol.7, no.1, pp.15-29, 2018 (Scopus)

VIII. **Exogenous versus endogenous for chaotic business cycles**

AKHMET M., Akhmetova Z., Fen M. O.

Discontinuity, Nonlinearity, and Complexity, vol.5, no.2, pp.101-119, 2016 (Scopus)

IX. **A new method of chaos generation**

AKHMET M., Fen M. O.

Nonlinear Studies, vol.21, no.2, pp.195-203, 2014 (Scopus)

X. **Chaos generation in hyperbolic systems**

AKHMET M., Fen M. O.

Discontinuity, Nonlinearity, and Complexity, vol.1, no.4, pp.367-386, 2012 (Scopus)

XI. **Distribution of Circles on a Circle and Correlation Between Vortex Rings of Superfluids**

Fen M. O., Erkoc S.

TURKISH JOURNAL OF PHYSICS, vol.31, no.3, pp.151-159, 2007 (ESCI)

Books

I. **Dynamics with Chaos and Fractals**

Akhmet M., Fen M. O., Alejaily E. M.

Springer, 2020

II. **Replication of Chaos in Neural Networks, Economics and Physics**

Akhmet M., Fen M. O.

Springer Berlin Heidelberg, 2016

Papers Published in Refereed Scientific Meetings

I. **Dynamic Equations with Modulo Periodic Poisson Stable Oscillations on Periodic Time Scales**

Fen F., Fen M. O.

The Third International Conference on Applied Mathematics in Engineering, Balıkesir, Turkey, 26 - 28 June 2024, pp.54

II. **Generation of Discontinuous Unpredictable Motions by Quasi-linear Systems with Regular Moments of Impulses**

Fen M. O., Fen F.

The Third International Conference on Applied Mathematics in Engineering, Balıkesir, Turkey, 26 - 28 June 2024, pp.211

III. **UNPREDICTABILITY IN RETARDED SHUNTING INHIBITORY CELLULAR NEURAL NETWORKS**

Fen F., Fen M. O.

IV International Conference on Mathematics and its Applications in Science and Engineering , Madrid, Spain, 12 - 14 July 2023, pp.77

IV. **UNPREDICTABLE SOLUTIONS OF QUASILINEAR SYSTEMS WITH DISCONTINUOUS RIGHTHAND SIDES**

Fen M. O., Fen F.

IV International Conference on Mathematics and its Applications in Science and Engineering , Madrid, Spain, 12 - 14 July 2023, pp.76

V. **Occurrence of Period-Doubling Cascades in Response Systems with Delay**
Fen M. O., Fen F.
International Conference on Nonlinear Science and Complexity (ICNSC23)), İstanbul, Turkey, 10 - 15 July 2023, pp.194

VI. **Diferansiyel Denklemlerin Öngörülemez Çözümleri**
Akhmet M., Fen M. O.

VII. **Mapping Fatou-Julia Iterations**
AKHMET M., Fen M. O., Alejaily E. M.
10th International Conference on Information Management and Engineering (ICIME), Manchester, England, 22 - 24 September 2018, pp.64-67

VIII. **Input-Output Mechanism of the Discrete Chaos Extension**
AKHMET M., Fen M. O.
5th International Conference on Nonlinear Science and Complexity (NSC), Xian, China, 4 - 09 August 2014, vol.15, pp.203-233

IX. **Period-doubling route to chaos in shunting inhibitory cellular neural networks**
AKHMET M., Fen M. O.
2013 8th International Symposium on Health Informatics and Bioinformatics, HIBIT 2013, Ankara, Turkey, 25 - 27 September 2013

X. **Replication of discrete chaos**
AKHMET M., Fen M. O.
6th International Conference on Chaotic Modeling and Simulation, CHAOS 2013, İstanbul, Turkey, 11 - 14 June 2013, pp.25-31

XI. **New criteria for generalized synchronization preserving the chaos type**
AKHMET M., Fen M. O.
6th International Conference on Chaotic Modeling and Simulation, CHAOS 2013, İstanbul, Turkey, 11 - 14 June 2013, pp.17-24

Supported Projects

Fen M. O., Sak O., TUBITAK Project, Lorenz Sisteminde Kaotik Aralıklılık Üretimi ve Kontrolü, 2024 - 2025
Fen M. O., Tutkun H., TUBITAK Project, Modifiye Edilmiş Lotka-Volterra Avcı-Av Modelinde Kaos Oluşumu, 2024 - 2025

Activities in Scientific Journals

Adıyaman Üniversitesi Fen Bilimleri Dergisi, Assistant Editor/Section Editor, 2019 - Continues

Peer Reviews in Scientific Publications

NEUROCOMPUTING, Journal Indexed in SCI-E, November 2024
Discontinuity, Nonlinearity, and Complexity, Other Indexed Journal, November 2024
QUALITATIVE THEORY OF DYNAMICAL SYSTEMS, Journal Indexed in SCI-E, October 2024
Discontinuity, Nonlinearity, and Complexity, Other Indexed Journal, October 2024
CHAOS, SOLITONS AND FRACTALS, Journal Indexed in SCI-E, October 2024
AEJ - ALEXANDRIA ENGINEERING JOURNAL, Journal Indexed in SCI-E, September 2024
IEEE ACCESS, Journal Indexed in SCI-E, May 2024
Discontinuity, Nonlinearity, and Complexity, Other Indexed Journal, February 2024
NEURAL NETWORKS, Journal Indexed in SCI-E, February 2024
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION, Journal Indexed in SCI-E, February 2024

FRONTIERS IN APPLIED MATHEMATICS AND STATISTICS, October 2021
NEUROCOMPUTING, July 2021
NEURAL COMPUTING AND APPLICATIONS, July 2021
CHAOS, SOLITONS AND FRACTALS, June 2021
HACETTEPE JOURNAL OF MATHEMATICS AND STATISTICS, June 2021
TURKISH JOURNAL OF MATHEMATICS, May 2021
BULLETIN OF THE IRANIAN MATHEMATICAL SOCIETY, May 2021
NEUROCOMPUTING, April 2021
IEEE TRANSACTIONS ON SYSTEMS, MAN, AND CYBERNETICS: SYSTEMS, April 2021
CHAOS, SOLITONS AND FRACTALS, March 2021
JOURNAL OF INDUSTRIAL AND MANAGEMENT OPTIMIZATION, March 2021
HACETTEPE JOURNAL OF MATHEMATICS AND STATISTICS, February 2021
Discontinuity, Nonlinearity, and Complexity, January 2021
OPTIMIZATION, September 2020
NUMERICAL ALGEBRA, CONTROL AND OPTIMIZATION, March 2020
NEURAL PROCESSING LETTERS, October 2019
NONLINEAR DYNAMICS, May 2019
NEURAL NETWORKS, April 2019
NEUROCOMPUTING, January 2019

Tasks In Event Organizations

Fen M. O., 15. Ankara Matematik Günleri, Scientific Congress, Ankara, Turkey, Mayıs 2024
FEN M. O., 14. Ankara Matematik Günleri Sempozyumu, Ankara, Turkey, Haziran 2019

Artistic Activity

Fen M. O., Düzenleme Kurulu Üyeliği, The 3rd International Conference on Complex Dynamical Systems and Their Applications: New Mathematical Concepts and Applications in Life Sciences, November 2014
Fen M. O., Düzenleme Kurulu Üyeliği, 1st National Workshop on Complex Dynamical Systems and Their Applications, September 2012