

## Prof. Fügen TORUNBALCI AYDIN

### Personal Information

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Address: YTÜ, Kimya-Metalurji Fakültesi, Matematik Müh. Bölümü, Davutpaşa/Esenler/İstanbul

### International Researcher IDs

ORCID: 0000-0001-9292-1832

Publons / Web Of Science ResearcherID: AAZ-4630-2020

ScopusID: 571978078998

Yoksis Researcher ID: 11481

### Biography

Prof. Dr. Fügen Torunbalcı Aydın 1980 yılında TÜRKİYE'nin ANKARA Üniversitesi (AÜ) FEN FAKÜLTESİ MATEMATİK LİSANS Bölümünden mezun olmuştur. 1985 yılına kadar kamu sektöründe çalışmış olup, 1985- 1987 yılları arasında YILDIZ TEKNİK ÜNİVERSİTESİ (Y.T.Ü) FEN BİLİMLERİ ENSTİTÜSÜ Matematik programından yüksek lisans (master) derecesini almıştır. 1986-1994 yılları arasında Y.T.Ü. Fen-Edebiyat Fakültesi Matematik Bölümü'nde Araştırma görevlisi olarak çalışmıştır. 1994 yılında Y.T.Ü. FEN BİLİMLERİ ENSTİTÜSÜ Matematik Programından Doktora derecesini elde etmiştir. 1994 den itibaren Y.T.Ü. Kimya-Metalurji Fakültesi Matematik Mühendisliği Bölümü'nde Araş. Gör. Dr. olarak, 1996-2012 yıllarında aynı bölümde Yard. Doç. Dr. olarak çalışmıştır. 2012 yılında Matematik, Cebir ve Sayılar Teorisi alanında Doç. Dr. ünvanını almıştır. 2019 ocak ayından itibaren aynı bölüm ve anabilim dalında Prof. Dr. olarak görevini sürdürmektedir. Aynı zamanda Matematik'in Temelleri ve Matematik Lojik Anabilim Dalı Başkanlığı'nı yürütmektedir. Araştırma alanları; Cebir ve Sayılar Teorisi, Grup Teori, Kuaterniyonlar Teorisi' dir. Kuaterniyonlar konusunda bilimsel çalışmalar yapmakta olup, çok sayıda makalesi bulunmaktadır. Evli ve bir erkek çocuk sahibidir.

### Education Information

Doctorate, Yıldız Technical University, Graduate School Of Natural And Applied Sciences, Matematik Bölümü, Turkey  
1987 - 1994

Postgraduate, Yıldız Technical University, Graduate School Of Natural And Applied Sciences, Matematik Bölümü, Turkey  
1985 - 1987

Undergraduate, Ankara University, Fen Fakültesi, Matematik Lisans, Turkey 1975 - 1980

### Foreign Languages

English, B2 Upper Intermediate

### Dissertations

Doctorate, Örgü Grupları ile ilgili Cebirsel Yapılar ve Bunların Temsilleri, Yıldız Teknik Üniversitesi, Fen Edebiyat Fakültesi, Matematik Bölümü / Matematik, 1994

Postgraduate, İki Boyutlu Laplace Denkleminin Kullanım Yerleri ve Çözüm Yöntemleri, Yıldız Teknik Üniversitesi, Fen Edebiyat Fakültesi, Matematik Bölümü / Matematik, 1987

## Research Areas

Mathematics, Associative Rings and Algebras, Linear and Multilinear Algebra: Matrix Theory, General Algebraic Systems, Group Theory and Generalizations, Natural Sciences

## Academic Titles / Tasks

Professor, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 2019 - Continues

Associate Professor, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 2012 - 2018

Assistant Professor, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 1996 - 2012

Research Assistant PhD, Yildiz Technical University, Faculty Of Chemical And Metallurgical Engineering, Department Of Mathematics Engineering, 1994 - 1996

Research Assistant, Yildiz Technical University, Faculty Of Arts & Science, Department Of Mathematics, 1986 - 1994

## Academic and Administrative Experience

Head of Department, Yildiz Technical University, FACULTY OF CHEMICAL AND METALLURGICAL ENGINEERING, Department of Mathematics Engineering, 2018 - Continues

Yıldız Teknik Üniversitesi, FACULTY OF CHEMICAL AND METALLURGICAL ENGINEERING, Matematik Mühendisliği , 2015 - 2018

Yıldız Teknik Üniversitesi, FACULTY OF CHEMICAL AND METALLURGICAL ENGINEERING, Matematik Mühendisliği , 2006 - 2009

Yıldız Teknik Üniversitesi, FACULTY OF CHEMICAL AND METALLURGICAL ENGINEERING, Matematik Mühendisliği , 2003 - 2006

## Courses

Real and Dual Quaternions, Postgraduate, 2019 - 2020

Linear Algebra of Real and Dual Quaternions, Undergraduate, 2018 - 2019

Uzmanlık Alan Dersi , Doctorate, 2017 - 2018, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014

Soyut Matematik Gr:1 , Undergraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015

Doktora Tez Danışmanlığı Gr:7, Doctorate, 2017 - 2018, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014

Cebir Gr:3, Undergraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014

Soyut Matematik Gr:3 , Undergraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015

Bitirme Çalışması Gr:18, Undergraduate, 2017 - 2018, 2016 - 2017, 2015 - 2016, 2014 - 2015

Cebir Gr:1 , Undergraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014

Lineer Cebir, Undergraduate, 2017 - 2018, 2016 - 2017, 2015 - 2016, 2014 - 2015

Mat. Müh. Tasarım Uygulama, Undergraduate, 2017 - 2018, 2016 - 2017, 2014 - 2015

Mühendislik Matematiği I, Postgraduate, 2016 - 2017

Matris Analizi Gr:3, Undergraduate, 2014 - 2015

Ayrık Matematik, Undergraduate, 2015 - 2016, 2014 - 2015, 2013 - 2014

Matris Analizi Gr:1, Undergraduate, 2014 - 2015

Bitirme Çalışması Gr:16, Undergraduate, 2013 - 2014

Uzmanlık Alan Dersi , Doctorate, 2014 - 2015

Ayrık Matematik Gr:3 , Undergraduate, 2014 - 2015

Grup. ilg. cebir. yap. ve temsil, Doctorate, 2014 - 2015  
Grup. ilg. cebir. yap. ve temsil, Doctorate, 2013 - 2014  
Diferansiyel Denklemler Gr: 40, Undergraduate, 2013 - 2014  
Diferansiyel Denklemler Gr: 19, Undergraduate, 2013 - 2014  
Ayrık Matematik Gr:1, Undergraduate, 2013 - 2014  
Mat. Müh. Tasarım Uygulama Gr:12, Undergraduate, 2013 - 2014  
Mat. Müh. Tasarım Uygulama Gr:2, Undergraduate, 2013 - 2014  
Doktora Tez Danışmanlığı Gr:7, Undergraduate, 2013 - 2014  
Mat. Müh. Tasarım Uygulama Gr:14, Undergraduate, 2013 - 2014  
Uzmanlık Alan Dersi , Doctorate, 2013 - 2014  
Bitirme Çalışması Gr:18, Undergraduate, 2013 - 2014  
Ayrık Matematik Gr:4, Undergraduate, 2013 - 2014

## Advising Theses

TORUNBALCI AYDIN F., Lineer Diferansiyel Denklem Sistemlerinin Matris Yardımı ile Çözümleri, Postgraduate, K.Gökhan(Student), 2012  
TORUNBALCI AYDIN F., Grup Temsilleri ve FG-modülleri, Postgraduate, H.ACUN(Student), 2003

## Jury Memberships

Associate Professor Exam, Associate Professor Exam, Yıldız Technical University, June, 2024  
Associate Professor Exam, Associate Professor Exam, Yıldız Technical University, May, 2023  
Doctoral Examination, Doctoral Examination, İstanbul Üniversitesi, December, 2022  
Associate Professor Exam, Associate Professor Exam, Yıldız Teknik Üniversitesi, November, 2022  
Associate Professor Exam, Associate Professor Exam, Yıldız Technical University, June, 2022  
Associate Professor Exam, Associate Professor Exam, Yıldız Technical University, March, 2022  
Associate Professor Exam, Associate Professor Exam, Yıldız Teknik Üniversitesi, August, 2020  
Associate Professor Exam, Associate Professor Exam, Yıldız Teknik Üniversitesi, February, 2020  
Associate Professor Exam, Associate Professor Exam, Yıldız Teknik Üniversitesi, September, 2019  
Appointment to Academic Staff-Assistant Professorship, Bilim Jürisi, Y.T.Ü KİMYA-METALÜRJİ FAKÜLTESİ DEKANLIĞI, June, 2018  
Doctorate, Doctorate, Trakya Üniversitesi, November, 2016  
Doctorate, Doctorate, Trakya Üniversitesi, November, 2016  
Post Graduate, Post Graduate, Yıldız Teknik Üniversitesi, June, 2014  
Post Graduate, Post Graduate, Yıldız Teknik Üniversitesi, June, 2012

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Dual-complex k-Fibonacci numbers**  
TORUNBALCI AYDIN F.  
CHAOS SOLITONS & FRACTALS, vol.115, pp.1-6, 2018 (SCI-Expanded)
- II. **Corrigendum to Bicomplex Fibonacci Quaternions**  
Torunbalcı Aydın F.  
Chaos Solitons & Fractals, vol.111, pp.235-238, 2018 (SCI-Expanded)
- III. **Gaussian Dual Fibonacci Numbers**  
Torunbalcı Aydın F., Yüce S.  
Utilitas Mathematica, vol.106, no.1, pp.185-199, 2018 (SCI-Expanded)

- IV. **Bicomplex Fibonacci quaternions**  
Torunbalcı Aydın F.  
CHAOS SOLITONS & FRACTALS, vol.106, pp.147-153, 2018 (SCI-Expanded)
- V. **A New Approach to Jacobsthal Quaternions**  
Torunbalcı Aydın F., Yüce S.  
FILOMAT, vol.31, pp.5567-5579, 2017 (SCI-Expanded)
- VI. **A New Aspect of Dual Fibonacci Quaternions**  
Yuce S., Torunbalcı Aydın F.  
Advances In Applied Clifford Algebras, vol.26, no.2, pp.873-884, 2016 (SCI-Expanded)
- VII. **A new interpretation of the orthofermion algebra**  
Tekin S. C., Torunbalcı Aydın F., Arık M.  
JOURNAL OF PHYSICS A-MATHEMATICAL AND THEORETICAL, vol.40, pp.7699-7706, 2007 (SCI-Expanded)
- VIII. **Probabilistic fuzzy sets and a related operator algebra**  
ARIK M., Aydın F.  
INTERNATIONAL JOURNAL OF THEORETICAL PHYSICS, vol.45, no.4, pp.771-785, 2006 (SCI-Expanded)
- IX. **BRAID GROUP-RELATED ALGEBRAS, THEIR REPRESENTATIONS AND GENERALIZED HYDROGENLIKE SPECTRA**  
ARIK M., AYDIN F., HIZEL E., KORNFILT J., YILDIZ A.  
JOURNAL OF MATHEMATICAL PHYSICS, vol.35, no.6, pp.3074-3088, 1994 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Higher Order Lucas Hybrid Quaternions**  
Torunbalcı Aydın F.  
Konuralp Journal of Mathematics, vol.12, no.1, pp.46-54, 2024 (Peer-Reviewed Journal)
- II. **On Some Properties of Bihyperbolic Numbers of The Lucas Type**  
Torunbalcı Aydın F.  
Communicationa in Advanced Mathematical Sciences, vol.6, no.4, pp.236-239, 2023 (Scopus)
- III. **q-Leonardo Bicomplex Numbers**  
Torunbalcı Aydın F.  
Konuralp Journal of Mathematics, vol.11, no.2, pp.176-183, 2023 (Scopus)
- IV. **Dual-hyperbolic Pell Quaternions**  
Torunbalcı Aydın F.  
JOURNAL OF DISCRETE MATHEMATICAL SCIENCES AND CRYPTOGRAPHY, vol.25, no.5, pp.1321-1334, 2022 (ESCI)
- V. **q-Fibonacci bicomplex and q-Lucas bicomplex numbers**  
Torunbalcı Aydın F.  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, vol.28, no.2, pp.261-275, 2022 (ESCI)
- VI. **On k-Fibonacci hybrid numbers and their matrix representations**  
Torunbalcı Aydın F.  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, vol.27, no.4, pp.257-266, 2021 (ESCI)
- VII. **q-Fibonacci bicomplex quaternions**  
Torunbalcı Aydın F.  
Cornell University ArXiv.org 2108.06351 math.RA , vol.1, no.1, pp.1-9, 2021 (Peer-Reviewed Journal)
- VIII. **Pauli--Fibonacci quaternions**  
Torunbalcı Aydın F.  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, vol.27, no.3, pp.184-193, 2021 (ESCI)
- IX. **Dual-complex Jacobsthal Quaternions**  
Torunbalcı Aydın F.  
Mathematical Sciences and Applications E-Notes, vol.8, pp.145-156, 2020 (Peer-Reviewed Journal)
- X. **Dual Jacobsthal quaternions**

- Torunbalcı Aydın F.  
Communications in Advanced Mathematical Science, vol.3, pp.130-142, 2020 (Peer-Reviewed Journal)
- XI. **Circular-hyperbolic Fibonacci Quaternions**  
Torunbalcı Aydın F.  
Notes on Number Theory and Discrete Mathematics, vol.26, pp.167-176, 2020 (ESCI)
- XII. **Dual complex Pell Quaternions**  
Torunbalcı Aydın F.  
Journal of Computer Science&Computational Mathematics, vol.10, pp.1-10, 2020 (Peer-Reviewed Journal)
- XIII. **Hyperbolic k-Fibonacci Quaternions**  
Torunbalcı Aydın F.  
Journal of computer science&Computational Mathematics, vol.9, no.1, pp.63-68, 2019 (Peer-Reviewed Journal)
- XIV. **Dual-complex k-Pell Quaternions**  
Torunbalcı Aydın F.  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, vol.25, pp.111-125, 2019 (ESCI)
- XV. **On the Bicomplex k-Fibonacci Quaternions**  
Torunbalcı Aydın F.  
Communication in Advanced Mathematical Sciences, vol.2, pp.227-234, 2019 (Peer-Reviewed Journal)
- XVI. **HYPERBOLIC FIBONACCI SEQUENCE**  
Torunbalcı Aydın F.  
UNIVERSAL JOURNAL OF MATHEMATICS & APPLICATIONS, vol.2, pp.59-64, 2019 (Peer-Reviewed Journal)
- XVII. **On Bicomplex Pell and Pell-Lucas Numbers**  
Torunbalcı Aydın F.  
Communications in Advanced Mathematical Sciences (Dergipark), vol.1, pp.142-155, 2018 (Peer-Reviewed Journal)
- XVIII. **The k-Fibonacci dual quaternions**  
Torunbalcı Aydın F.  
International Journal of Mathematical Analysis, vol.12, pp.363-373, 2018 (Peer-Reviewed Journal)
- XIX. **On Generalizations of the Jacobsthal sequence**  
TORUNBALCI AYDIN F.  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, vol.24, no.1, pp.120-135, 2018 (ESCI)
- XX. **Generalized dual Fibonacci quaternions with dual coefficient**  
Torunbalcı Aydın F.  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, vol.24, pp.70-85, 2018 (ESCI)
- XXI. **Generalized Dual Pell Quaternions**  
TORUNBALCI AYDIN F., KÖKLÜ K., YÜCE S.  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, vol.23, no.4, pp.66-84, 2017 (ESCI)
- XXII. **On Generalizations of the Pell Sequence**  
TORUNBALCI AYDIN F., KÖKLÜ K.  
arXiv, math.CO, 2017 (Peer-Reviewed Journal)
- XXIII. **Some New Generalizations of the Lucas Sequence**  
Torunbalcı Aydın F., Yüce S.  
International Journal of Mathematical Combinatorics, pp.36-52, 2017 (Peer-Reviewed Journal)
- XXIV. **Dual Pell Quaternions**  
Torunbalcı Aydın F., Yüce S.  
JOURNAL OF ULTRA SCIENTIST OF PHYSICAL SCIENCES, vol.28, no.7, pp.328-339, 2016 (Peer-Reviewed Journal)
- XXV. **Generalized Dual Fibonacci Quaternions**  
Yuce S., Torunbalcı Aydın F.  
Applied Mathematics E-Notes, vol.16, pp.276-289, 2016 (Scopus)
- XXVI. **Generalized Dual Fibonacci Sequence**  
Yüce S., Torunbalcı Aydın F.  
The International Journal of Science&Technoledge, vol.4, no.9, pp.193-200, 2016 (Peer-Reviewed Journal)

- XXVII. **Aralıklı üç boyutlu (solid) taşıma problemine bir çözüm önerisi**  
Torunbalcı Aydın F., Güler Ç., Sivri M.  
Mühendislik ve Fen Bilimleri Dergisi, vol.3, pp.109-118, 2006 (Peer-Reviewed Journal)
- XXVIII. **A Solution Proposal for Interval Solid Transportation Problem**  
Torunbalcı Aydın F., Güler Ç., Sivri M.  
Sigma Journal of Engineering and Natural Science, vol.3, pp.109-118, 2006 (Peer-Reviewed Journal)
- XXIX. **Simetrik Grup Temsillerinin Q-Deformasyonu**  
Torunbalcı Aydın F., Arık M.  
Yıldız Teknik Üniversitesi Dergisi, vol.1, no.2002, pp.82-91, 2002 (Peer-Reviewed Journal)
- XXX. **QUANTUM GRASSMANNIAN MANIFOLDS**  
Arık M., Torunbalcı Aydın F., Çelik S., Hızal E.  
BALKAN PHYSICS LETTERS, vol.1, pp.102-106, 1993 (Peer-Reviewed Journal)

## **Books & Book Chapters**

- I. **CEBİRSEL YAPILAR**  
TORUNBALCI AYDIN F.  
Nobel Yayın Dağıtım, Ankara, 2018
- II. **Lineer Cebir**  
TORUNBALCI AYDIN F.  
Nobel Yayıncılık, Ankara, 2017

## **Refereed Congress / Symposium Publications in Proceedings**

- I. **Gaussian Dual Fibonacci Numbers**  
Torunbalcı Aydın F., Yüce S.  
13. Geometri Sempozyumu, İstanbul, Turkey, 27 - 30 July 2015, pp.1
- II. **Von Neumann stability Analysis of Explicit Nonstandard Scheme for Newell-Whitehead equation with Finite Difference Method**  
Nalbant K. G., Torunbalcı Aydın F.  
International Conference on Applied Analysis and Mathematical Modelling 2013, İstanbul, Turkey, 2 - 05 June 2013, vol.1, pp.693-694

## **Memberships / Tasks in Scientific Organizations**

Balkan-Fizik Derneği, Member, 1993 - 1993  
Matematik Derneği, Member, 1986 - 1986

## **Scientific Refereeing**

NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, Journal Indexed in ESCI, March 2023  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, Journal Indexed in ESCI, November 2021  
Notes on Number Theory and Discrete Mathematics, Journal Indexed in ESCI, October 2021  
NOTES ON NUMBER THEORY AND DISCRETE MATHEMATICS, Journal Indexed in ESCI, January 2021  
Fundamental Journal of Mathematics and Applications-Dergipark, Other Journals, May 2020  
Chaos Solitons & Fractals, SCI Journal, February 2020  
Notes on Number Theory and Discrete Mathematics, Journal Indexed in ESCI, February 2020  
Cumhuriyet Science Journal, National Scientific Refreed Journal, September 2019

Miskolc Mathematical Notes, SCI Journal, July 2018

IEEE Access, SCI Journal, June 2018

Computational Methods and Function Theory (CMFT), Other Indexed Journal, March 2018

## Scientific Research / Working Group Memberships

KALİTE ve AKREDİTASYON, YILDIZ TEKNİK ÜNİVERSİTESİ, Türkiye, <http://www.mtm.yildiz.edu.tr/>, 2013 - Continues

Geometri, YILDIZ TEKNİK ÜNİVERSİTESİ, Türkiye, <http://www.mat.yildiz.edu.tr/matematik/3/Geometri/91>, 2014 - 2017

Kalite ve Eğitim Geliştirme Komisyonu, YILDIZ TEKNİK ÜNİVERSİTESİ, Türkiye, 2008 - 2015

## Metrics

Publication: 43

Citation (WoS): 21

Citation (Scopus): 21

H-Index (WoS): 2

H-Index (Scopus): 2

## Congress and Symposium Activities

13 ncü Geometri Sempozyumu, Attendee, İstanbul, Turkey, 2015

International Conference on Applied Analysis and Mathematical Modelling, Attendee, İstanbul, Turkey, 2013

International Conference on Applied Analysis and Mathematical Modelling, Attendee, Turkey, 2012

## Awards

Torunbalcı Aydın F., YTÜ Akademik Ödül, Yıldız Teknik Üniversitesi, April 2023

Torunbalcı Aydın F., Certificate of Contribution in Reviewing, Bulgarian Academy Of Sciences, March 2023

Torunbalcı Aydın F., Certificate of Contribution in Reviewing, Notes On Number Theory And Discrete Mathematics, October 2021