

## Assoc. Prof. HACER ÖZDEN AYNA

### Personal Information

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### International Researcher IDs

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Publons / Web Of Science ResearcherID: AAH-5090-2021

ScopusID: 23973633900

Yoksis Researcher ID: 122768

### Education Information

Doctorate, Bursa Uludağ University, FEN BİLİMLERİ ENSTİTÜSÜ, Matematik (Dr), Turkey 2005 - 2009

Postgraduate, Bursa Uludağ University, FEN BİLİMLERİ ENSTİTÜSÜ, Matematik (YI) (Tezli), Turkey 2002 - 2004

Undergraduate, Bursa Uludağ University, FEN-EDEBİYAT FAKÜLTESİ, Matematik Bölümü, Turkey 1998 - 2002

### Foreign Languages

English, B2 Upper Intermediate

### Certificates, Courses and Trainings

Innovation, EĞİTİMDE İNOVASYON VE ETKİLEŞİM, BURSA ULUDAĞ ÜNİVERSİTESİ, 2020

### Dissertations

Doctorate, P-adik q-ölçüm ve uygulamaları, 2009

Postgraduate, Kuadratik formlar ve idealler, 2004

### Research Areas

Mathematics, General Mathematics, Measure and Integration, Special Functions, Numerical Analysis, Natural Sciences

### Academic Titles / Tasks

Assistant Professor, Bursa Uludağ University, FEN-EDEBİYAT FAKÜLTESİ, MATEMATİK, 2012 - Continues

Lecturer, Bursa Uludağ University, FEN-EDEBİYAT FAKÜLTESİ, MATEMATİK, 2009 - 2012

Research Assistant, Bursa Uludağ University, FEN-EDEBİYAT FAKÜLTESİ, MATEMATİK, 2002 - 2009

## Courses

GENEL MATEMATİK II, Undergraduate, 2021 - 2022  
HALKA TEORİS I, Postgraduate, 2022 - 2023  
TEZ DANIŞMANLIĞI I, Postgraduate, 2022 - 2023  
MATEMATİK II, Undergraduate, 2021 - 2022  
MATEMATİK I, Undergraduate, 2022 - 2023  
YÜKSEK LİSANS UZMANLIK ALAN DERSİ I, Postgraduate, 2022 - 2023  
MATEMATİK II , Undergraduate, 2020 - 2021  
GENEL MATEMATİK II, Undergraduate, 2020 - 2021, 2019 - 2020  
MATEMATİK I, Undergraduate, 2021 - 2022, 2019 - 2020, 2018 - 2019, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014, 2012 - 2013, 2011 - 2012, 2010 - 2011  
GENEL MATEMATİK I , Undergraduate, 2021 - 2022, 2019 - 2020, 2018 - 2019  
GENEL MATEMATİK I, Undergraduate, 2020 - 2021  
MATEMATİK I , Undergraduate, 2020 - 2021  
MATEMATİK II, Undergraduate, 2018 - 2019, 2015 - 2016, 2014 - 2015, 2012 - 2013, 2010 - 2011  
GENEL MATEMATİK II, Undergraduate, 2018 - 2019  
MÜHENDİSLİK MATEMATİĞİ, Undergraduate, 2017 - 2018  
SOYUT CEBİR, Doctorate, 2016 - 2017  
ANALİZ II, Undergraduate, 2015 - 2016, 2010 - 2011  
SPEKTRAL GRAF TEORİ I, Doctorate, 2016 - 2017  
UYGULAMALI GRAF TEORİ I , Doctorate, 2016 - 2017  
ANALİZ I, Undergraduate, 2016 - 2017, 2015 - 2016, 2009 - 2010  
TEMEL MATEMATİK I, Undergraduate, 2015 - 2016, 2014 - 2015, 2013 - 2014  
TEMEL MATEMATİK II, Undergraduate, 2014 - 2015, 2010 - 2011  
MATEMATİK, Undergraduate, 2015 - 2016, 2014 - 2015  
MATEMATİK, Undergraduate, 2015 - 2016  
MATEMATİK II, Undergraduate, 2014 - 2015  
MESLEKİ MATEMATİK I, Associate Degree, 2014 - 2015, 2012 - 2013  
MESLEKİ MATEMATİK I, Associate Degree, 2014 - 2015, 2012 - 2013, 2011 - 2012  
MATEMATİK I, Undergraduate, 2014 - 2015, 2013 - 2014, 2012 - 2013  
MESLEKİ MATEMATİK II, Associate Degree, 2011 - 2012  
MESLEKİ MATEMATİK II, Associate Degree, 2011 - 2012  
GENEL ANALİTİK FONKSİYONLAR, Doctorate, 2012 - 2013  
TEMEL MATEMATİK I, Associate Degree, 2012 - 2013  
MATEMATİK II, Associate Degree, 2010 - 2011  
MATEMATİK II, Associate Degree, 2010 - 2011  
ANALİZ II, Undergraduate, 2010 - 2011  
TEMEL MATEMATİK, Associate Degree, 2010 - 2011, 2009 - 2010  
METRİK UZAYLAR II, Undergraduate, 2010 - 2011  
MATEMATİK I, Associate Degree, 2010 - 2011  
GALOIS TEORİSİ, Undergraduate, 2010 - 2011  
METRİK UZAYLAR II, Undergraduate, 2010 - 2011  
GALOIS TEORİSİ, Undergraduate, 2010 - 2011  
MATEMATİK I, Associate Degree, 2010 - 2011  
GENEL MATEMATİK, Associate Degree, 2010 - 2011  
GENEL MATEMATİK, Associate Degree, 2010 - 2011

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

- I. **The Effect of Vertex and Edge Removal on Sombor Index**  
YURTTAŞ GÜNEŞ A., ÖZDEN AYNA H., CANGÜL İ. N.  
SYMMETRY-BASEL, vol.16, no.2, 2024 (SCI-Expanded)
- II. **Independence number of graphs and line graphs of trees by means of omega invariant**  
ÖZDEN AYNA H., Zihni F. E., Erdogan F., CANGÜL İ. N., Srivastava G., Srivastava H. M.  
REVISTA DE LA REAL ACADEMIA DE CIENCIAS EXACTAS FISICAS Y NATURALES SERIE A-MATEMATICAS, vol.114, no.2, 2020 (SCI-Expanded)
- III. **New families of special numbers and polynomials arising from applications of p-adic q-integrals**  
Kim D., ÖZDEN AYNA H., ŞİMŞEK Y., YARDIMCI A.  
ADVANCES IN DIFFERENCE EQUATIONS, 2017 (SCI-Expanded)
- IV. **Modification and unification of the Apostol-type numbers and polynomials and their applications**  
ÖZDEN AYNA H., ŞİMŞEK Y.  
APPLIED MATHEMATICS AND COMPUTATION, vol.235, pp.338-351, 2014 (SCI-Expanded)
- V. **Unified representation of the family of L-functions**  
ÖZDEN AYNA H., ŞİMŞEK Y.  
JOURNAL OF INEQUALITIES AND APPLICATIONS, 2013 (SCI-Expanded)
- VI. **A unified presentation of certain meromorphic functions related to the families of the partial zeta type functions and the L-functions**  
Srivastava H. M., ÖZDEN AYNA H., CANGÜL İ. N., ŞİMŞEK Y.  
APPLIED MATHEMATICS AND COMPUTATION, vol.219, no.8, pp.3903-3913, 2012 (SCI-Expanded)
- VII. **A unified presentation of the generating functions of the generalized Bernoulli, Euler and Genocchi polynomials**  
ÖZDEN AYNA H., ŞİMŞEK Y., Srivastava H. M.  
COMPUTERS & MATHEMATICS WITH APPLICATIONS, vol.60, no.10, pp.2779-2787, 2010 (SCI-Expanded)
- VIII. **On the behavior of two variable twisted p-adic Euler q-l-functions**  
ÖZDEN AYNA H., CANGÜL İ. N., ŞİMŞEK Y.  
NONLINEAR ANALYSIS-THEORY METHODS & APPLICATIONS, vol.71, no.12, 2009 (SCI-Expanded)
- IX. **A new approach to q-Genocchi numbers and their interpolation functions**  
CANGÜL İ. N., ÖZDEN AYNA H., ŞİMŞEK Y.  
NONLINEAR ANALYSIS-THEORY METHODS & APPLICATIONS, vol.71, no.12, 2009 (SCI-Expanded)
- X. **A new extension of q-Euler numbers and polynomials related to their interpolation functions**  
ÖZDEN AYNA H., ŞİMŞEK Y.  
APPLIED MATHEMATICS LETTERS, vol.21, no.9, pp.934-939, 2008 (SCI-Expanded)
- XI. **Interpolation function of the (h, q)-extension of twisted Euler numbers**  
ÖZDEN AYNA H., Simsek Y.  
COMPUTERS & MATHEMATICS WITH APPLICATIONS, vol.56, no.4, pp.898-908, 2008 (SCI-Expanded)
- XII. **Multivariate interpolation functions of higher-order q-euler numbers and their applications**  
ÖZDEN AYNA H., CANGÜL İ. N., ŞİMŞEK Y.  
ABSTRACT AND APPLIED ANALYSIS, 2008 (SCI-Expanded)
- XIII. **Remarks on sum of products of (h, q)-twisted Euler polynomials and numbers**  
ÖZDEN AYNA H., CANGÜL İ. N., ŞİMŞEK Y.  
JOURNAL OF INEQUALITIES AND APPLICATIONS, 2008 (SCI-Expanded)

## Articles Published in Other Journals

- I. **A Study on Zagreb Indices of Vertex-Switching for Special Graph Classes**  
AYNA H. Ö.  
Journal of New Theory, no.48, pp.48-60, 2024 (Peer-Reviewed Journal)
- II. **Remarks on line graphs related to omega invariant**  
Özden Ayna H., Yurttaş Güneş A., Cangül İ. N.

Proceedings book of the 13th symposium on generating functions of special numbers and polynomials and their applications, vol.13, pp.201-204, 2023 (Conference Book)

- III. **Üç yüzlü grafların doğru graflarının omega invaryantı**  
ÖZDEN AYNA H.  
Balıkesir Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.21, pp.657-665, 2019 (Peer-Reviewed Journal)
- IV. **Modified Apostol Type Polynomials Arising From Umbral Calculus**  
Mansour T, ÖZDEN H., ŞİMŞEK Y.  
ADVANCED STUDIES IN CONTEMPORARY MATHEMATICS, vol.24, no.2, pp.175-182, 2014 (Scopus)
- V. **Hurwitz type multiple Genocchi zeta function**  
Özden Ayna H., Cangül İ. N., Şimşek Y.  
Numerical Analysis and Applied Mathematics, Computational Methods in Science and Engineering, AIP Conference Proceedings, vol.1148, pp.781-784, 2009 (Peer-Reviewed Journal)
- VI. **Euler polynomials associated with p-adic q-Euler measure**  
Özden Ayna H., Şimşek Y., Cangül İ. N.  
General Mathematics, vol.15, no.23, pp.24-37, 2007 (Peer-Reviewed Journal)
- VII. **A Note on p-adic q-Euler Measure**  
Özden Ayna H., Şimşek Y., Hoon Rim S., Cangül İ. N.  
Adv. Studies in Contemporary Maths., , vol.14, no.2, pp.233-239, 2007 (Peer-Reviewed Journal)
- VIII. **The Number of Rational Points on Elliptic Curves  $y^2 = x^3 + b^2$  over Finite Fields**  
GEZER B., ÖZDEN H., TEKCAN A., BİZİM O.  
Int. Jour. of Comp. and Math. Sci., vol.1, no.3, pp.178-184, 2007 (Peer-Reviewed Journal)
- IX. **On the Quadratic Irrationals Quadratic Ideals and Indefinite Quadratic Forms**  
TEKCAN A., ÖZDEN H.  
Bulletin of the Irish Mathematical Society, vol.58, pp.69-79, 2006 (Peer-Reviewed Journal)

## Books & Book Chapters

- I. **EŞİTSİZLİKLER**  
Özden Ayna H.  
in: MESLEKİ MATEMATİK, BASRİ ÇELİK, Editor, Dora, Bursa, pp.139-162, 2016
- II. **EŞİTSİZLİKLER**  
BOZYOKUŞ H., ÇELİK B., ÇELİK N., EZENTAŞ R., ÖZDEN AYNA H.  
in: Mesleki Matematik, ÇELİK BASRİ, Editor, Dora, pp.126-146, 2016

## Refereed Congress / Symposium Publications in Proceedings

- I. **Some New Properties of Line Graphs and Their Omega Invariants**  
Balseven Y., Köse D., Özmen B., YURTTAŞ GÜNEŞ A., ÖZDEN AYNA H., CANGÜL İ. N.  
2nd International E-Conference on Mathematical and Statistical Science: A Selcuk Meeting, Konya, Turkey, 05 June 2023
- II. **Power Graphs of Some Graph Classes**  
Özmen B., Balseven Y., Köse D., ÖZDEN AYNA H., YURTTAŞ GÜNEŞ A., CANGÜL İ. N.  
2nd International E-Conference on Mathematical and Statistical Science: A Selcuk Meeting, Konya, Turkey, 05 June 2023
- III. **Omega Invariant of Second and Third Power Graphs of Tadpole Graphs**  
Köse D., Özmen B., Balseven Y., ÖZDEN AYNA H., YURTTAŞ GÜNEŞ A., CANGÜL İ. N.  
2nd International E-Conference on Mathematical and Statistical Science: A Selcuk Meeting, Konya, Turkey, 05 June 2023
- IV. **The number of realizations of a degree sequence**

CANGÜL İ. N., ÖZDEN AYNA H., YURTTAŞ GÜNEŞ A., URLU ÖZALAN N., ÇEVİK A. S.

13th Symposium on Generating Functions of Special Numbers and Polynomials and their Applications, Antalya, Turkey, 11 - 13 March 2023

- V. **Remarks on line graphs related to omega invariant**  
ÖZDEN AYNA H., URLU ÖZALAN N., YURTTAŞ GÜNEŞ A., CANGÜL İ. N.  
13th Symposium on Generating Functions of Special Numbers and Polynomials and their Applications, Antalya, Turkey, 11 - 13 March 2023
- VI. **Degree Sequences and Omega Invariant**  
ÖZDEN AYNA H., YURTTAŞ GÜNEŞ A., CANGÜL İ. N.  
International Conference of Multidisciplinary Research, Karnataka, India, 22 November 2022, pp.34
- VII. **Realizability Properties of Some Sets of Integers**  
YURTTAŞ GÜNEŞ A., ÖZDEN AYNA H., CANGÜL İ. N.  
International Conference of Multidisciplinary Research, Karnataka, India, 22 - 24 November 2022, pp.35
- VIII. **Remarks on Dirichlet type L functions**  
ÖZDEN H.  
26th International Conference of the Jangjeon Mathematical Society, India, 1 - 04 August 2013
- IX. **Unification of partial zeta functions**  
Srivastava H., Özden Ayna H., Cangül İ. N., Şimşek Y.  
International Congress in Honour of Professor H. M. Srivastava, Bursa, Turkey, 23 - 26 August 2012
- X. **Remarks on Unification of Generating Functions for the Family of Some Special Numbers and Polynomials**  
ÖZDEN H.  
25th International Conference of the Jangjeon Mathematical Society, South Korea, 25 - 28 July 2012
- XI. **On generating functions of special numbers and polynomials**  
ÖZDEN H.  
The 24th International Congress of The Jangjeon Mathematical Society, ICJMS'2011, Konya, Turkey, 20 - 23 July 2011
- XII. **Unification of Generating Function of the Bernoulli, Euler and Genocchi Numbers and Polynomials**  
ÖZDEN AYNA H.  
International Conference on Numerical Analysis and Applied Mathematics, Rhodes, Greece, 19 - 25 September 2010, vol.1281, pp.1125-1128
- XIII. **Hurwitz Type Multiple Genocchi Zeta Function**  
ÖZDEN AYNA H., CANGÜL İ. N., ŞİMŞEK Y.  
International Conference on Computational Methods in Science and Engineering, Hersonissos, Greece, 25 - 30 September 2008, vol.1148, pp.781-783
- XIV. **Remarks on Interpolation Functions of q-Bernoulli Numbers**  
Özden Ayna H., Cangül İ. N., Şimşek Y.  
The 20th Int. Congress of Jangjeon Math. Soc., , Bursa, Turkey, 21 August 2008, pp.1-12
- XV. **A new approach to q-Genocchi numbers and their interpolation functions**  
Cangül İ. N., Özden Ayna H., Şimşek Y.  
World Congress of Nonlinear Analysts (WCNA), Florida, United States Of America, 1 - 10 July 2008, pp.1-14
- XVI. **On the behaviour of two variable twisted p-adic Euler q-l-functions**  
Özden Ayna H., Cangül İ. N., Şimşek Y.  
World Congress of Nonlinear Analysts (WCNA), Florida, United States Of America, 01 July 2008, pp.1-13
- XVII. **Recurrence formulae for some special numbers**  
Cangül İ. N., Özden Ayna H., Şimşek Y.  
Workshop on Mathematical Methods in Applied Sciences, Bursa, Turkey, 22 May 2008, pp.1-6
- XVIII. **Euler polynomials associated with p-adic q-Euler measure**  
Özden Ayna H., Şimşek Y., Cangül İ. N.  
International Symposium on Complex Analysis, Sibiu, Romania, 25 August 2007, pp.1-11
- XIX. **Generating functions and recurrence formulae for Bernoulli and Euler numbers**

Cangül İ. N., Özden Ayna H., Şimşek Y.

International Symposium on Geometric Function Theory and Applications, İstanbul Kültür University, İstanbul, Turkey, 20 August 2007, pp.1-16

**XX. A note on twisted Euler numbers and polynomials associated with basic l-functions**

Özden Ayna H., Şimşek Y., Cangül İ. N.

International Symposium on Geometric Function Theory and Applications, İstanbul Kültür University, İstanbul, Turkey, 20 August 2007, pp.1-6

**XXI. Sonlu Cisimler Üzerinde Tanımlı  $y^2=x^3+b^2$  Eliptik Eğrileri Üzerindeki Rasyonel Noktaların Sayısı**

ÖZDEN H., İNAM İ., TEKCAN A., BİZİM O.

XIX. Ulusal Matematik Sempozyumu, Kütahya, Turkey, 22 - 25 August 2006, pp.44

**XXII. Sonlu Cisimler Üzerinde Tanımlı Frey Eliptik Eğrileri Üzerindeki Rasyonel Noktalar**

İNAM İ., ÖZDEN H., TEKCAN A., BİZİM O.

XIX. Ulusal Matematik Sempozyumu, Kütahya, Turkey, 22 - 25 August 2006, pp.43

**XXIII. İndefinite Kuadratik Formların Devirleri**

TEKCAN A., BİZİM O., ÖZDEN H., İNAM İ.

XIX. Ulusal Matematik Sempozyumu, Kütahya, Turkey, 22 - 25 August 2006, pp.42

## Expert Reports

**I. BİLİRKİŞİ RAPORU**

Özden Ayna H.

TC BURSA 4.İDARE MAHKEMESİ, pp.2, Bursa, 2021

## Supported Projects

ÖZDEN AYNA H., Project Supported by Higher Education Institutions, Üreteç Fonksiyonları, 2012 - 2014

ÖZDEN AYNA H., Project Supported by Higher Education Institutions, BAZI ÖZEL SAYI VE POLİNOMLAR VE BUNLARIN P ADİK UYGULAMALARI, 2011 - 2013

CANGÜL İ. N., ÖZDEN AYNA H., Project Supported by Higher Education Institutions, Özel Sayı Teorik Fonksiyonlar, 2008 - 2011

ÖZDEN AYNA H., CANGÜL İ. N., Project Supported by Higher Education Institutions, Sayılar Teorisi, 2006 - 2009

## Scientific Refereeing

TURKISH JOURNAL OF MATHEMATICS, SCI Journal, July 2014

APPLIED MATHEMATICS AND COMPUTATION, SCI Journal, July 2013

## Metrics

Publication: 53

Citation (WoS): 399

Citation (Scopus): 526

H-Index (WoS): 9

H-Index (Scopus): 9

## **Scholarships**

TÜBİTAK YURTIÇİ DOKTORA BURS PROGRAMI, TÜBİTAK, 2005 - 2009

## **Awards**

Özden Ayna H., 2008 yılı Fen Edebiyat Fakültesi Yayın Üçüncülük Ödülü, Bursa Uludağ Üniversitesi, January 2009