

## Prof. Şenay Baydaş

### Personal Information

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### International Researcher IDs

ORCID: 0000-0002-1026-9471

Yoksis Researcher ID: 18129

### Education Information

Doctorate, Van Yüzüncü Yil University, Fen Bilimleri Enstitüsü, Matematik, Turkey 2001 - 2006

Postgraduate, Van Yüzüncü Yil University, Fen Bilimleri Enstitüsü, Matematik, Turkey 1997 - 2000

Undergraduate, Van Yüzüncü Yil University, Fen Edebiyat Fakültesi, Matematik, Turkey 1993 - 1997

### Dissertations

Doctorate, 2x3R Sabit Çatı Değişimli Robotik Modelleme, Van Yüzüncü Yil University, Fen Bilimleri Enstitüsü, Matematik, 2006

### Research Areas

Mathematics, Geometry, Natural Sciences

### Academic Titles / Tasks

Professor, Van Yüzüncü Yil University, Fen Fakültesi, Matematik Bölümü, 2019 - Continues

Associate Professor, Van Yüzüncü Yil University, Fen Fakültesi, Matematik Bölümü, 2013 - 2019

Associate Professor, Massachusetts Institute of Technology, School of Science, Mathematics, 2014 - 2014

Assistant Professor, Van Yüzüncü Yil University, Fen Fakültesi, Matematik Bölümü, 2007 - 2013

Research Assistant, Van Yüzüncü Yil University, Fen Fakültesi, Matematik Bölümü, 2003 - 2007

### Academic and Administrative Experience

Vice Rector, Van Yüzüncü Yil University, Fen Fakültesi, Matematik Bölümü, 2022 - Continues

Van Yüzüncü Yil University, Fen Fakültesi, Matematik, 2020 - Continues

Van Yüzüncü Yil University, Matematik, 2007 - Continues

Deputy Head of Department, Van Yüzüncü Yil University, Fen Fakültesi, Matematik Bölümü, 2008 - 2008

## Courses

Mekanizmaların Kinematığı ve Uygulamaları II, Postgraduate, 2018 - 2019, 2016 - 2017  
Manifoldlar Üstünde Tensör Analizi , Doctorate, 2018 - 2019  
Robotik II, Postgraduate, 2018 - 2019, 2016 - 2017  
Robotik I, Postgraduate, 2018 - 2019, 2016 - 2017  
Mekanizmaların Kinematığı ve Uygulamaları II, Doctorate, 2018 - 2019  
Oklit Dışı Geometrilere, Postgraduate, 2018 - 2019, 2016 - 2017  
Analitik Geometri II, Undergraduate, 2011 - 2012

## Advising Theses

Baydaş Ş., Split Kuaterniyonlarla Mekanizma Kinematığı, Postgraduate, M.Siddik(Student), 2019  
Baydaş Ş., R3 deki Yüzey Eğrilerinin Bezier Eğrileri ve Matlab Uygulamaları, Postgraduate, C.Yılmaz(Student), 2018  
Baydaş Ş., Galois Teorisi, Palindromik Polinomlar ve Sıfırlarının Bulunuşu için Algoritmalar, Postgraduate, F.Tutar(Student), 2018  
Baydaş Ş., 2-3RRR Mekanizma Zincirinin Kinematik Analizi ve Matlab Uygulamaları, Postgraduate, B.Kalkan(Student), 2018  
Baydaş Ş., Klasik Mekanikte Eylem Fonksiyonelinin İkinci Varyasyonu, Postgraduate, F.Gürman(Student), 2017  
Baydaş Ş., Matlab Uygulamalı Euler-Poinsot Yaklaşımı ile Bir Yerdeğiştirmenin Eylemsizlik Eğrisi, Postgraduate, M.Dilan(Student), 2017  
Baydaş Ş., Kinematics of Delta Robot with Matlab Applications, Postgraduate, F.Nasrullidin(Student), 2017  
Baydaş Ş., Relativistik Kinematik, Postgraduate, R.Kara(Student), 2013  
Baydaş Ş., Bumerang hareketinin kinematik açıdan incelenmesi, Postgraduate, Y.Muslu(Student), 2010

## Jury Memberships

Post Graduate, Tez Savunma, Bitlis Eren Üniversitesi, January, 2020  
Post Graduate, Tez Savunma, Van Yüzüncü Yıl Üniversitesi, December, 2019  
Doctoral Examination, Doktora Yeterlilik Sınavı, Van Yüzüncü Yıl Üniversitesi, November, 2019  
Post Graduate, Tez Savunma, Van Yüzüncü Yıl Üniversitesi, May, 2018  
Doctoral Examination, Doktora Yeterlilik Sınavı, Atatürk Üniversitesi, July, 2017  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, June, 2017  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, May, 2017  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, March, 2017  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, March, 2016  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, January, 2016  
Doctorate, Doktora Tez Savunması, Atatürk Üniversitesi, December, 2015  
Doctorate, Doktora Tez Savunması, Van Yüzüncü Yıl Üniversitesi, January, 2015  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, January, 2013  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, January, 2013  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, January, 2013  
Post Graduate, Yüksek Lisans Tez Savunması, Van Yüzüncü Yıl Üniversitesi, January, 2010

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

- I. **The cissoïd of Diocles in the Lorentz-Minkowski plane**  
Baydaş Ş., Karakaş B.  
TURKISH JOURNAL OF MATHEMATICS, vol.43, no.3, pp.1232-1240, 2019 (SCI-Expanded)
- II. **Defining a curve as a Bezier curve**

Baydaş Ş., Karakaş B.

JOURNAL OF TAIBAH UNIVERSITY FOR SCIENCE, vol.13, no.1, pp.522-528, 2019 (SCI-Expanded)

III. **Relation between Press Intensity and Angular Velocity at a RPPP Mechanism**

Baydaş Ş., Karakaş B.

MATHEMATICAL PROBLEMS IN ENGINEERING, 2011 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Geometric Interpretation and Manifold Structure of Markov Matrices**  
Karakas B., Baydas S.  
Turkish Journal of Mathematics and Computer Science, vol.13, no.1, pp.14-18, 2021 (Peer-Reviewed Journal)
- II. **Kinematics of Supination and Pronation with Stewart Platform**  
Karakas B., Baydas S.  
Journal of Mathematical Sciences and Modelling, vol.4, no.1, pp.1-6, 2021 (Peer-Reviewed Journal)
- III. **Design a Mechanism with Denavit-Hartenberg Representation and Dual Quaternion**  
Baydas S., Karakas B.  
Journal of Mathematics, vol.4, pp.5-13, 2018 (Scopus)
- IV. **An Umbrella Surface in  $\mathbb{R}^3$  as an Orbit Surface**  
Baydas S., Karakas B.  
JOURNAL OF INFORMATICS AND MATHEMATICAL SCIENCES, vol.-, pp.1-9, 2018 (Peer-Reviewed Journal)
- V. **A GEOMETRIC APPROACH TO UMBRELLA MOTION IN  $\mathbb{R}^3$**   
Baydas S., Karakas B.  
Hadronic Journal, vol.40, no.4, pp.345-352, 2017 (Peer-Reviewed Journal)
- VI. **A New Approach to Meusnier's Theorem in Game Theory**  
Baydas S., Karakas B.  
Applied Mathematical Sciences, vol.-, pp.1-8, 2017 (Peer-Reviewed Journal)
- VII. **Lie Group Structure on the Set of  $BP(\mathbb{R}^2)$**   
Baydas S., Karakas B.  
International Mathematical Forum, vol.-, pp.1-6, 2017 (Peer-Reviewed Journal)
- VIII. **A Controllable Space Motion Along A Bezier Curve**  
Baydas S.  
Algebras, Groups and Geometries, vol.34, no.3, pp.213-224, 2017 (Peer-Reviewed Journal)
- IX. **An action of a regular curve on  $\mathbb{R}^3$  and Matlab applications**  
Baydas S., Karakas B.  
JOURNAL OF INFORMATICS AND MATHEMATICAL SCIENCES, vol.5, no.3, pp.133-141, 2013 (Peer-Reviewed Journal)
- X. **Modeling boomerang motion in Euclidean plane**  
Baydas S., Karakas B., NURI ALMALI M.  
Applied Mathematical Sciences, vol.6, pp.4067-4074, 2012 (Scopus)
- XI. **Matlab Applications for Cone Surfaces of 1-parameter Motions**  
Baydas S., Karakas B.  
International Mathematical Forum, vol.7, no.38, pp.1885-1893, 2012 (Peer-Reviewed Journal)
- XII. **Modelling of the 3R Motion at Non-Parallel Planes**  
Baydas S., Karakas B.  
JOURNAL OF INFORMATICS AND MATHEMATICAL SCIENCES, vol.4, no.1, pp.85-92, 2012 (Peer-Reviewed Journal)
- XIII. **n-fold Product and Deformation Mapping on  $\mathbb{R}^n$  and Matlab Applications,**  
Karakas B., Baydas S.  
Adv. Theor. Appl. Mech., vol.5, no.4, pp.191-198, 2012 (Peer-Reviewed Journal)
- XIV. **Transitions Among  $SO(3)/\sim$ ,  $S^2/\sim$  and  $QO/\sim$ ,**  
Baydas S., Karakas B.

International Mathematical Forum, vol.7, no.38, pp.1895-1904, 2012 (Peer-Reviewed Journal)

**XV. A Normed Projection Mapping on Unit Sphere**

Baydaş Ş., İşleyen Ş.

YYÜ Fen Bilimleri Dergisi, vol.16, no.1, pp.5-11, 2011 (Peer-Reviewed Journal)

**XVI. A Group Structure on  $S^2$  /  $\sim$**

Baydaş Ş., Karakaş B.

Groups, Algebras and Geometries, no.28, pp.225-232, 2011 (Peer-Reviewed Journal)

**XVII. Kinematics of 2x3R Robotics Modelling: Climbing The Stairs Form,**

Baydaş Ş., Karakaş B.

Hadronic Journal, vol.1, pp.303-320, 2010 (Peer-Reviewed Journal)

**XVIII. Quaternion Forms of the Motions Defined as 2x3R Robotics Modelling**

Baydaş Ş., Karakaş B.

Math Track, vol.-, pp.65-83, 2006 (Peer-Reviewed Journal)

**XIX. Kinematics of 2x3R Robotics Modelling: Walking Form**

Baydaş Ş., Karakaş B.

Advances in Applied Mathematical Analysis, vol.1, no.2, pp.1-10, 2006 (Peer-Reviewed Journal)

## **Books & Book Chapters**

**I. Lie Grupları Kinematik**

KARAKAŞ B., BAYDAŞ Ş.

Palme Yayınevi, Ankara, 2023

**II. Eğriler ve Yüzeyler Matlab Uygulamalı**

KARAKAŞ B., BAYDAŞ Ş.

Palme Yayınevi, Ankara, 2022

**III. Oyun Teorisi**

KARAKAŞ B., BAYDAŞ Ş.

Palme Yayınevi, Ankara, 2022

**IV. Matlab Uygulamalı Analitik Geometri**

Karakaş B., Baydaş Ş.

Palme Yayıncılık, Ankara, 2019

**V. Analitik Geometri**

Karakaş B., Baydaş Ş.

Palme Yayıncılık, Ankara, 2008

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

**I. Pronation Motion in the Concepts of Artificial Intelligence Approach**

Karakaş B., Baydaş Ş.

ICAI4.0 - International Conference on Artificial Intelligence towards Industry 4.0, Hatay, Turkey, 14 - 16 November 2019, pp.5

**II. A New Algorithm to Define the Control Points for a Bezier Curve**

Karakaş B., Baydaş Ş.

17th International Geometry Symposium, Erzincan, Turkey, 19 - 22 July 2019, pp.148

**III. Transferring of Subspaces Between Metric Spaces and Comparison of Their Properties**

Karakaş B., Baydaş Ş.

17th International Geometry Symposium, Erzincan, Turkey, 19 - 22 July 2019, pp.147

**IV. Galois theory and palindromic-polynomials**

Tutar F., Baydaş Ş., Karakaş B.

2nd International Conference on Pure and Applied Mathematics (ICPAM-VAN 2018), Van, Turkey, 11 - 13 September 2018, pp.139

- V. **On Mechanisms in the Three-Dimensional Minkowski Space**  
Baydaş Ş., Karakaş B.  
2nd International Conference on Pure and Applied Mathematics (ICPAM-VAN 2018), Van, Turkey, 11 - 13 September 2018, pp.57
- VI. **On the Orbit Surface of Two Parameter Motion**  
Tuğrul F., Baydaş Ş., Karakaş B.  
2nd International Conference on Pure and Applied Mathematics (ICPAM-VAN 2018), Van, Turkey, 11 - 13 September 2018, pp.136
- VII. **Kinematics of 4R and 2RPR mechanisms in Clifford algebra**  
Dörma V., Karakaş B., Baydaş Ş.  
2nd International Conference on Pure and Applied Mathematics (ICPAM-VAN 2018), Van, Turkey, 11 - 13 September 2018, pp.70
- VIII. **Inverse kinematics computation for a 6-DOF articulated robot arm using conformal geometric algebra**  
Kalkan B., Baydaş Ş., Karakaş B.  
2nd International Conference on Pure and Applied Mathematics (ICPAM-VAN 2018), Van, Turkey, 11 - 13 September 2018, pp.89
- IX. **Non-Euclidean form of Minkowski Space and 4-Dimensional Geometry**  
Karakas B., Baydaş Ş.  
16th International Geometry Symposium 2018, Manisa, Turkey, 4 - 07 July 2018, vol., pp.1
- X. **D-H Representation in Lorentzian Space and Mechanical Applications**  
Baydaş Ş.  
16th International Geometry Symposium 2018, Manisa, Turkey, 4 - 07 July 2018, vol., pp.2
- XI. **A Different Wedge Product using Cross Product**  
Baydaş Ş., Karakaş B.  
International Conference on Mathematics and Mechanics 2018, Viyana, Austria, 15 - 16 May 2018, pp.52
- XII. **A New Technique for Finding of the Control Points of Bezier Curves**  
Karakas B., Baydaş Ş.  
International Conference on Mathematics and Mechanics 2018, Viyana, Austria, 15 - 16 May 2018, pp.26
- XIII. **2x3R Mechanism with D-H Representation and Dual Quaternions**  
Baydaş Ş., Karakaş B.  
International Conference on Mathematics and Mechanics 2018, Viyana, Austria, 15 - 16 May 2018, pp.53
- XIV. **Pronation and Supination with Stewart Platform**  
Karakas B., Baydaş Ş.  
International Conference on Mathematics and Mechanics 2018, Viyana, Austria, 15 - 16 May 2018, pp.27
- XV. **Geometry and kinematics of 2RRS-UPS Stewart manipulator with moving base platform**  
Kalkan B., Baydaş Ş., Karakaş B.  
Caucasian Mathematics Conference, CMC II, Van, Turkey, 22 - 24 August 2017, pp.83
- XVI. **Lie group structure on the set of S1r**  
Karakas B., Baydaş Ş.  
Caucasian Mathematics Conference, CMC II, Van, Turkey, 22 - 24 August 2017, pp.84
- XVII. **Simulations of mechanisms using Ge- oGebra and Matlab**  
Baydaş Ş., Karakaş B.  
Caucasian Mathematics Conference, CMC II, Van, Turkey, 22 - 24 August 2017, pp.38
- XVIII. **On the second variation of the action in classical mechanics**  
Gürman F., Baydaş Ş., Akkuş H., Karakaş B.  
Caucasian Mathematics Conference, CMC II, Van, Turkey, 22 - 24 August 2017, pp.71
- XIX. **The properties of the orbits under Lie group action**  
Tuğrul F., Baydaş Ş., Karakaş B.

Caucasian Mathematics Conference, CMC II, Van, Turkey, 22 - 24 August 2017, pp.131

- XX. **An Equivalence Relation on Control Points of a Bezier Curve**  
Karakaş B., Baydaş Ş.  
15th International Geometry Symposium 2017, Amasya, Turkey, 3 - 06 July 2017
- XXI. **RPPPTi Mechanism with Matlab Applications**  
Baydaş Ş., Karakaş B.  
15th International Geometry Symposium 2017, Amasya, Turkey, 3 - 06 July 2017
- XXII. **A New Kinematical And Mathematical Modelling For 3d Printers**  
Karakaş B., Baydaş Ş.  
International Conference on Mathematics and Mathematics Education, Şanlıurfa, Turkey, 11 - 13 May 2017, pp.656-660
- XXIII. **Displacements with n-Control Points**  
Karakaş B., Baydaş Ş.  
International Conference on Mathematics and Mathematics Education, Şanlıurfa, Turkey, 11 - 13 May 2017, pp.692-693
- XXIV. **Construction a New Differentiable Manifold Structure on Markov Matrices**  
Karakaş B., Baydaş Ş.  
ICMM 2016 International Conference on Mathematics and Mechanics, Venedik, Italy, 1 - 02 May 2016, pp.6
- XXV. **GROUP STRUCTURE OF MARKOV POLYGONS**  
Karakaş B., Baydaş Ş.  
International Conference on Pure and Applied Mathematics (ICPAM 2015), Van, Turkey, 25 - 28 August 2015, pp.1
- XXVI. **Lie Group Structure on  $n \times n$  Markov Matrix**  
Baydaş Ş., Karakaş B.  
International Conference on Pure and Applied Mathematics (ICPAM 2015), Van, Turkey, 25 - 28 August 2015, pp.1
- XXVII. **Special Type Stochastic Markov Lie Groups**  
Karakaş B., Baydaş Ş.  
XI. Geometri Sempozyumu, Ordu, Turkey, 1 - 05 July 2013, pp.1
- XXVIII. **Umbrella Surfaces in  $R^3$  as an Orbit Surfaces**  
Karakaş B., Baydaş Ş.  
1st International Eurasian Conference on Mathematical Sciences and Applications, Priştina, Kosova, 3 - 07 September 2012, pp.1
- XXIX. **Umbrella Motion in  $R^3$**   
Karakaş B., Baydaş Ş.  
1st International Eurasian Conference on Mathematical Sciences and Applications, Priştina, Kosova, 3 - 07 September 2012, pp.2
- XXX. **Application of Meusnier's Sphere of Saddle Surface in Game Theory**  
Karakaş B., Baydaş Ş.  
X. Geometri Sempozyumu, Balıkesir, Turkey, 13 - 16 June 2012, pp.34
- XXXI. **Multiple Motion with One Center**  
Baydaş Ş., Karakaş B.  
X. Geometri Sempozyumu, Balıkesir, Turkey, 13 - 16 June 2012, pp.65
- XXXII. **Deformation Product on  $R^n$  and Matlab Applications**  
Baydaş Ş., Karakaş B.  
The International Conference of Differential Geometry and Dynamical Systems, Bükreş, Romania, 6 - 09 October 2011, pp.1-5
- XXXIII. **Matlab Applications of Cone Surfaces of 1-parameter Motion**  
Baydaş Ş., Karakaş B.  
The International Conference of Differential Geometry and Dynamical Systems, Bükreş, Romania, 6 - 09 October 2011, pp.1
- XXXIV. **An Action of a Regular Curve on  $R^3$  and Matlab Application**  
Baydaş Ş., Karakaş B.

- XXIV. Ulusal Matematik Sempozyumu, Bursa, Turkey, 7 - 10 September 2011, pp.41
- XXXV. **A Group Structure on  $S_2$**   
Baydaş Ş., Karakaş B.  
IX. Geometri Sempozyumu, Samsun, Turkey, 7 - 10 June 2011, pp.55
- XXXVI. **The Planar Motion Which Has The Moving Pole Points That They Bounce Periodically**  
Baydaş Ş., Karakaş B.  
VIII. Geometri Sempozyumu, Antalya, Turkey, 1 - 03 May 2010, pp.96
- XXXVII. **Synchronized Motion Between The Intersecting Planes**  
Karakas B., Baydaş Ş., Erdur S.  
VII. Geometri Sempozyumu, Kırşehir, Turkey, 1 - 03 July 2009, pp.53

## Supported Projects

- Baydaş Ş., Project Supported by Higher Education Institutions, Lorentz Uzayında DH Temsili ve Mekanik Uygulamalar, 2018 - 2019
- Karakas B., Baydaş Ş., Project Supported by Higher Education Institutions, Stewart Platform Algoritması ile Pronasyon-spinasyon Hareket Modellemesi, 2017 - 2018
- Baydaş Ş., Project Supported by Higher Education Institutions, N Kontrol Noktalı Kapalı Bir Bezier Uzay Eğrisi Boyunca Bumerang Hareketi Uzay Formu, 2017 - 2018
- Karakas B., Baydaş Ş., Project Supported by Higher Education Institutions, Katı Olmayan Tek Merkezli Simetrik Hareket: KOS Hareketi, 2011 - 2013

## Scientific Refereeing

- Iğdır Üniversitesi Fen Bilimleri Enstitüsü Dergisi, National Scientific Refreed Journal, December 2019
- Conference Proceedings of Science and Technology, Other Indexed Journal, August 2019
- Dumlupınar Üniversitesi Fen Bilimleri Dergisi, National Scientific Refreed Journal, August 2019
- Dokuz Eylül Üniversitesi Mühendislik Fakültesi Fen ve Mühendislik Dergisi, National Scientific Refreed Journal, August 2019
- Bitlis Eren Üniversitesi Fen Bilimleri Dergisi, National Scientific Refreed Journal, February 2019
- Applications and Applied Mathematics, Other Indexed Journal, October 2018
- Applications and Applied Mathematics, Other Indexed Journal, October 2018
- Journal of Taibah University for Science, Other Indexed Journal, September 2018
- Robotica, SCI Journal, February 2018
- Project Supported by Higher Education Institutions, February 2018
- Robotica, SCI Journal, September 2017
- International Journal of Physical Science, Other Indexed Journal, February 2012
- Industrial Robot- An International Journal, SCI Journal, January 2012

## Metrics

- Publication: 64  
Citation (WoS): 8  
H-Index (WoS): 1

## Congress and Symposium Activities

- 17th International Geometry Symposium, Session Moderator, Erzincan, Turkey, 2019

ICPAM 2018, Session Moderator, Van, Turkey, 2018

16th International Geometry Symposium, Session Moderator, Manisa, Turkey, 2018

Caucasian Mathematics Conference CMC II, Session Moderator, Van, Turkey, 2017

15. International Geometry Symposium, Session Moderator, Amasya, Turkey, 2017

International Conference On Mathematics And Mathematics Education, Session Moderator, Şanlıurfa, Turkey, 2017

ICPAM 2015, Session Moderator, Van, Turkey, 2015

## **Non Academic Experience**

Namık Kemal İlköğretim Okulu

Naci Gökçe Lisesi