

## Curriculum Vita

### S E M R A    Ö Z T Ü R K

Mathematics Department, Middle East Technical University,  
Ankara, 06800, Türkiye, (312) 210 2973, sozkap@metu.edu.tr,  
<http://users.metu.edu.tr/sozkap/>

September 16, 2025

**BIRTH DATE/PLACE** 1963/BURSA

#### EDUCATION

- 1995            **Ph.D.**, Mathematics, University of Wisconsin, Madison, WI, USA  
Thesis title : *Local to Global Invariants for G-Modules and G-Spaces*  
Thesis advisor : Prof. Amir Assadi  
Major topics : Algebra; Algebraic Topology, Representation Theory, Group Theory  
Minor : Computer Science
- 1994            **M.A.**, Mathematics, University of Wisconsin, Madison, WI, USA
- 1987            **M.S.**, Mathematics, Middle East Technical University, Ankara, Türkiye  
Thesis title : *Existence of Normal Complements in Finite Groups*  
Thesis advisor : Prof. İsmail Güloğlu
- 1985            **B.S.**, Mathematics, Middle East Technical University, Ankara, Türkiye  
Includes English preparatory school (1980 – 1981)
- 1980            Chemistry Technical Lycée, Mehmet Rüştü Uzel Kimya Meslek Lisesi, Ankara, Türkiye

#### PROGRAMMING LANGUAGES

1982-85            Fortran, PL1

#### LANGUAGES

English            : Fluent (Nov. 2025 - eKPDS 90pts)  
French            : Beginner  
German            : Beginner, learning currently

#### HONORS AND AWARDS

- 2013            Associate Professor, ODTÜ
- 2012            Performance Award, ODTÜ
- 2011            Associate Professor, ÜAK Doçent

2008	Partial Support from MSRI for participating at the Parent Program: Representation Theory of Finite Groups and Related topics, Homological Methods in Representation Theory, MSRI, Berkeley, CA, USA
2004	TÜBİTAK-NATO-B2 Postdoctoral Research Fellowship used at Univ. of Virginia, USA
1987 – 1991	TÜBİTAK-NATO-D scholarship for Ph.D. for abroad, used in U.S.A.
1987	Turkish Ministry of Edu. scholarship for Ph.D. for abroad declined in favor of the above
1985 – 1987	TÜBİTAK scholarship
June 1985	Graduation with the second highest GPA in a class of 60 students Mathematics Department, Middle East Technical University
June 1978	Highest GPA in all chemistry technical lycées in Türkiye
1978 – 1980	Turkish Ministry of Education scholarship

## EMPLOYMENT

2013 – Jan.7– 2011	<b>Associate Professor</b> , Mathematics Dept., Middle East Technical University, Ankara, Türkiye <b>ÜAK Doçentlik Ünvanı</b> ,
2005 – 2013	<b>Assistant Professor</b> , Mathematics Dept., Middle East Technical University, Ankara, Türkiye
2004 – 2005	<b>Visiting Faculty</b> , Mathematics Department., University of Virginia, Charlottesville, VA, U.S.A.
2001 – 2004	<b>Assistant Professor</b> , Mathematics Dept., Middle East Technical University, Ankara, Türkiye
1995 – 2001	<b>Instructor</b> , Mathematics Dept., Middle East Technical University, Ankara, Türkiye
1990 – 1995	<b>Teaching assistant</b> , Mathematics Dept., University of Wisconsin, Madison, WI, USA
1986 – 1987	<b>Teaching assistant</b> , Mathematics Dept., Middle East Technical University, Ankara, Türkiye
Summer 1984	<b>Computer programmer</b> and sales representative, DecPort-Casio, Inc.,

## PUBLICATIONS (all are single author, all, except 1.\*, are in SCIE)

10. *On  $m$ -th Roots of Nilpotent Matrices*,  
*Electron. J. Linear Algebra* **37**, November 2021 , 718–733.
9. *Jordan Types of Commuting Nilpotent Matrices*,  
*Commun. Korean Math. Soc.* **33**, 2018 , No. 4, 1097–1102
8. *Restricted Modules and Conjectures for Modules of Constant Jordan Type*,  
*Algebras and Representation Theory* **5**, 2014, 1437–1455
7.  *$p$ -Power Points and Modules of Constant  $p$ -power Jordan Type*,  
*Communications in Algebra* **39**, 2011, 3781–3800
6. *Jordan type of a  $k[C_p \times C_p]$ -module*,  
*New York J. Math.* **17a**, 2011, 307–313
5. *Commuting Nilpotent Operators and Maximal Rank*,  
*Complex Anal. Oper. Theory* **4**, 2010, 901–904
4. *Structure and Detection Theorems for  $k[C_2 \times C_4]$ -modules*,

*Rendiconti del Seminario Matematico della Università di Padova* **123**, 2010 , 169–189

3. *Betti Numbers of Fixed Point Sets and Multiplicities of Indecomposable Summands*,  
*Journal of Australian Mathematical Society* **74**, 2003, 165–171
2. *A Note on a Theorem of Dwyer and Wilkerson*,  
*Archiv der Mathematik* **76**, 2001, 25–29
- 1.\* *Equivalent Conditions for the Existence of Normal Complements*,  
*Int. Journal of Mathematics, Game Theory and Algebra* **9**, 1999, no 4, 269–275

## CITATIONS

For article 5 above : On commutators of square zero Hilbert Space Operators by Laurent W. Marcoux , Heydar Radjavi, and Yuanhang Zhang , *Canad. J. Math.* 2025, pp. 136  
<http://dx.doi.org/10.4153/S0008414X24000750>

For article 4 and 7 above: [Book] Representations of Elementary Abelian  $p$ -Groups and Vector Bundles  
DJ Benson - 2017 - [books.google.com](http://books.google.com)

For article 4 above: 2014 Finitely Generated Modules over Group Rings of a Direct Product of Two Cyclic Groups, Ahmed Najim and Mohammed Elhassani Charkani Hindawi Publishing Corporation *Algebra* Volume 2014, Article ID 256020, 5 pages <http://dx.doi.org/10.1155/2014/256020>

## THESES

Ph.D. Thesis, 1995, *Local to Global Invariants for  $G$ -Modules and  $G$ -Spaces*, supervised by Prof. Amir H. Assadi  
M.S. Thesis, 1987, *Existence of Normal Complements in Finite Groups*, supervised by Prof. İsmail Güloğlu

## PREPRINTS

3. *Asymptotes at infinity and praised functions as counterexamples*, 2021
2. *On  $F_p$ -Rational Structure of Nilpotent Cones in Classical Lie Algebras*, Joint with Brian Parshall and Bin Shu,  
Preprint, 2011, <http://arxiv.org/pdf/math/0703527>
1. *A Restriction Theorem for  $k[Z_2 \times Z_4]$ -modules to Spanned cyclic Subgroups and Multiplicities Set*  
Preprint, 2002, Cited in *Generic and Maximal Jordan Types* by E. Friedlander, J. Pevtsova, A. Suslin,  
*Invent. Math.* 168 (2007), 485–522.

## RESEARCH INTERESTS

I am interested in modules over group algebras  $k[G]$  where  $k$  is a field, in particular, of characteristic  $p > 0$  and the group order is divisible by  $p$ , simply referred as Modular Representation Theory, and spaces with a  $G$ -action. Especially modules arising from  $G$ -actions on spaces, their restrictions to subalgebras of  $k[G]$  and their interaction with the fixed point sets of the subgroups of the group acting on the space are among my main interests. Many of the rings coming out of groups such as the group ring, cohomology

ring, representation ring, character ring, Burnside ring together with their interactions are sources of excitement for me. In particular, I have work on modules of constant Jordan type, and proved some conjectures by Suslin, Rickard hold for a subclass of modules. Recently, I studied  $m$ -th roots of nilpotent matrices. I also had some work in algebraic topology at the beginning of my career but I did not proceed in that direction.

## TEACHING

Undergraduate Courses:

- 1XX Fund.of Math., Basic Algeb.Structures, Analytic Geom., Calculus I, II, Calc.for Math.Students, Introduction to Number Theory
- 2XX Basic Linear Algebra, Linear Algebra I, II, Elementary Geometry,
- 3XX Abstract Algebra,
- 4XX Elementary Geometric Topology, Rings and Modules, Introduction to Group Theory, Introduction to Representation Theory

Graduate Courses:

- 5XX Algebraic Topology I, II
- 5XX Representation Theory of Finite Groups
- 7XX Homological Methods in Topology
- 7XX Homological Algebra

## ADVISING

2005 – present **Advisor for Double Major and Minor Students** Mathematics Dept., O.D.TÜ.

## SUPERVISING

M.S. Thesis by Sunay Doğan, 2024, Quantum Magic Squares in View of Birkoff-Von Neumann Theorem

## CONFERENCES (Attendee/Speaker/Organizer)

- Sep. 1–4 2025 37. Ulusal Matematik Sempozyumu, Akdeniz Üniversitesi, Antalya, Türkiye
- July 14-17 2025 11. Halka Modül ve Cebir Çalıştayı, Bursa Teknik Üniversitesi, Bursa, Türkiye
- May 2 2024 Cahit Arf Conference 2025, Invitee : Geoge Lusztig, MIT, U.S.A.,  
Orta Doğu Teknik Üniversitesi, Ankara, Türkiye  
**Organizer**
- May 3-4 2024 TKMD IX. Çalıştay- 2024 İzmir Ekonomi Üniversitesi, Türkiye  
**Title of Talk** :  $m$ -th Roots of Matrices Revisited
- May 2 2024 Cahit Arf Conference 2024, Invitee : David Harvey, UNSW -Sydney, Australia,  
Orta Doğu Teknik Üniversitesi, Ankara, Türkiye  
**Organizer**
- April 27 2024 8. Cemal Koç Cebir Günleri, Hacettepe Üniversitesi, Ankara, Türkiye

- Oct 13 2022 Cahit Arf Conference 2022, Invitee : Andrew Sutherland, MIT, USA,  
Orta Doğu Teknik Üniversitesi, Ankara, Türkiye  
**Organizer**
- June 8 2022 Mimar Sinan Güzel Sanatlar Üniversitesi, Online Seminar, Türkiye  
**Title of Talk** :  $m$ -th roots of nilpotent matrices
- May 2-3 2019 Group Theory in Ankara; in honour of Mahmut Kuzucuoglu's 60th birthday,  
O.D.T.Ü, Ankara, Türkiye
- April 27 2019 Cemal Koç Algebra Days 7, Ihsan Doğramacı Bilkent Üniversitesi, Ankara, Türkiye
- Apr.26-28 2019 6. TKMD Çalıştay1, Selçuk Üniversitesi, Konya, Türkiye
- April 24 2019 Dr. Emir Öngüner : DLR, göttingen, Germany, Cahit Arf'ı Anma Etkinliği:  
Halide ve Cahit Arf'ın Almanya Mektupları, O.D.T.Ü. Ankara, Türkiye  
**Organizer**
- Nov 29 2018 Cahit Arf Conference 2018, Invitee : Fernando Rodriguez Villegas, ICTP, Italy,  
Orta Doğu Teknik Üniversitesi, Ankara, Türkiye  
**Organizer**
- Sep 12-15 2018 31. Ulusal Matematik Sempozyumu, Bin Ali Yıldırım Üniversitesi, Erzincan, Türkiye
- July 20-24 2018 New Trends in Rings and Modules I, Gebze Teknik Üniversitesi, Kocaeli, Türkiye
- Nov 4 2016 TKMD, Kadın ve Bilim IV, Atılım Üniversitesi, Ankara, Türkiye  
**Title of Talk** : A glimpse of representation theory
- Apr 4 2015 Cemal Koç Cebir Semineri III, Gebze Teknik Üniversitesi, Gebze, Türkiye  
**Title of Talk** : Conjectures on modules of constant Jordan type
- May 2-4 2014 Birinci TKMD Çalıştay1, Gebze Yüksek Teknoloji Enstitüsü, Gebze, Türkiye
- May 2013 Antalya Algebra Days XV, Şirince, İzmir, Türkiye  
**Title of Talk** : Betti numbers of fixed point sets and conjectures for mod.of const.Jordan type
- Feb 4-8 2013 Second Biennial International Group Theory Conference, Doğu Üniversitesi, İstanbul, Türkiye  
**Organizer and speaker**  
**Title of Talk** : Restricted Modules and Conjectures for Modules of Constant Jordan type
- Nov. 2012 Cahit Arf Conference 2012, Invitee : David E. Nadler from U.California, Berkeley, CA, USA,  
Orta Doğu Teknik Üniversitesi, Ankara, Türkiye  
**Organizer**
- Oct. 18-21 2012 ICAAM 2012 First International Conference on Applied Mathematics and Operator Theory,  
Gümüşhane Üniversitesi, Gümüşhane, Türkiye  
**Title of Talk** : Commuting Nilpotent Operators with Maximal Rank
- July27-Au.5 2012 Cohomology and Support in Representation Theory and Related Topics, UW-Seattle, USA  
**Title of Poster** : Modules of Constant Jordan Type and Related Conjectures
- May31-Jn1 2012 Ankara Matematik Günleri 7, Bilkent, Ankara, Türkiye  
**Title of Talk**: Suslin ve Rickard'ın Sabit Jordan Jordan Tipli Modüller Hakkındaki Öngörülleri
- Nov. 24, 2011 Cahit Arf Conference 2011, Invitee : Jonathan Pila from Math.Inst., University of Oxford, UK,  
Orta Doğu Teknik Üniversitesi, Ankara, Türkiye  
**Organizer**

- June 7–11 2011 International Conference; Finite Groups and Their Automorphisms, IMBM and Boğaziçi Üniversitesi, İstanbul Türkiye  
**Organizer**
- Mar 22-26 2010 Recent Advances in operator theory, organized by State Univ. of New York at Albany, USA and Puerto Rico University-Mayaguez, Rincon, PR, USA  
**Title of Talk** : Commuting Nilpotent Operators and Maximal Rank
- July 5–5 2010 Algebra Workshop II in Honor of Cemal Koc., IMBM, Boğaziçi Üniversitesi, İstanbul Türkiye  
**Title of Talk** :  $p$ -Power points and modules of constant Jordan type
- June 19 2009 Algebra Workshop, IMBM, Boğaziçi Üniversitesi, İstanbul Türkiye  
**Title of Talk** : Automorphism of groups and group extensions
- June 4-5 2009 4. Ankara Matematik Günleri Sempozyumu, Orta Doğu Teknik Üniversitesi, Ankara, Türkiye  
**Title of Talk** :  $p$ -Power Points and Modules of Constant  $p$ -power Jordan Type
- March 25 2009 Mathematics Department, Bilkent University, Ankara, Türkiye  
**Title of Talk** :  $p$ -Power Points and Modules of Strongly Constant Jordan Type
- Aug 18-22 2008 International Conference on Ring and Module Theory, Hacettepe Üniversitesi, Ankara, Türkiye  
**Title of Talk** :  $p$ -Power Points and Modules of Strongly Constant Jordan Type
- May 22-23 2008 3. Ankara Matematik Günleri Sempozyumu, Ankara Üniversitesi, Ankara, Türkiye  
**Title of Talk** :  $p$ -Power Points and Modules of Strongly Constant Jordan Type
- Mh31-Apr4,2008 MSRI, Parent Program:Representation Theory of Finite Groups and Related topics, Homological Methods in Representation Theory, Berkeley, CA, USA  
Partially supported by MSRI
- March 25 2007 Mathematics Department, Bilkent University, Ankara, Türkiye  
**Title of Talk** :  $p$ -Power Points and Modules of Strongly Constant Jordan Type
- May 22-27 2007 Antalya Algebra Days IX, Antalya, Turkey  
**Title of Talk** : Modules of Uniform Jordan Type
- Apr29-May1,2007 University of Bielefeld, Bielefeld, Germany  
Representations, Cohomology and Support Spaces
- Dec. 9 2006 Topoloji Günü, Atılım Üniversitesi, Matematik Bölümü,  
**Title of Talk**: Localization in Cohomology
- May 23-25.2005 Institute of Advanced Study, Womens Program 2005, Groups and Geometry, Princeton, NJ, USA
- May 20-21 2005 Conference in Honor of R.L. Wilson and J. Lepowsky, Lie Algebras , Vertex Operator Algebras, and Their Applications, NCSU, NC, USA
- May 17,19 2005 Operator Theory Seminar, Mathematics Dept. University of Virginia, Charlottesville, VA, USA  
**Title of Talk** : Extensions of  $C^*$ -algebras I , II
- Mar.25 2005 Colloquium, Galludet University, Washington DC, USA  
**Title of Talk** : Localization and Fixed Point Sets
- Feb.11 2005 Colloquium, Georgia Southern University, Statesboro, Georgia, USA  
**Title of Talk**: Betti Numbers of Fixed Point Sets
- Jan. 5-9 2005 Joint Mathematics Meeting, Atlanta, USA

Nov.15-17 2004	Algebra Seminar, Mathematics Dept., University of Georgia, Georgia, USA <b>Title of Talk</b> : On Modular Representations of Abelian $p$ -groups of Small Rank
Sep.16-19 2004	Algebraic Cycles, K-Theory, and Modular Representation Theory in Honor of E. Friedlander's 60'th birthday, Northwestern University, Chicago, USA
Oct. 14 2004	Mathematics Dept. University of Virginia, Charlottesville, VA, USA <b>Title of Talk</b> : Betti Numbers of Fixed Point Sets and Multiplicities of Indecomp. Summands
Oct. 6 2004	Mathematics Dept. University of Virginia, Charlottesville, VA, USA <b>Title of Talk</b> : A Detection Theorem for $Z_2 \times Z_4$ -modules
July 2004–2005	Visiting Faculty Member, Mathematics Department, University of Virginia , Charlottesville, USA
April 2 2003	Gazi Algebra Day, Gazi Üniversitesi, Ankara, Türkiye
Sept.20-23 2002	Int. Conference on the Hilbert-Smith conjecture, İstanbul Bilgi Üniversitesi, İstanbul, Türkiye <b>Title of Talk</b> : Betti Numbers of Fixed Point Sets and Multiplicities of Indecomp. Summands
June7-13 2002	AMS-IMS-SIAM, Summer Research Institute, Groups, Representations and Cohomology Mount Holyoke College, South Hadley, MA, USA
May21-26 2002	Antalya Cebir Günleri IV, Antalya, Türkiye
March25 2002	Bilkent Cebir Günü, Ankara, Türkiye
June25-29 2001	Workshop on Singularity Theory, Feza Gürsey Enstitüsü, İstanbul, Türkiye
March 2001	Bilkent Cebir Günleri, Bilkent, Ankara, Türkiye
May17-21 2000	Antalya Cebir Günleri II, Antalya, Türkiye <b>Title of Talk</b> : Existence of Normal Complements
May18-23 1999	Antalya Cebir Günleri, Antalya, Türkiye <b>Title of Talk</b> : Multiplicities of Indecomposable Summands
May-June 1998	Workshop on Low-dimensional Topology, METU, Türkiye
July 1997	International Workshop on Number Theory, METU, Türkiye
July 1996	AMS, Summer Research Institute, Cohomology Representations and Actions of Finite Groups, University of Washington-Seattle, WA, USA <b>Title of Talk</b> : Numerical Invariants for $G$ -Modules
May 1996	5-th Gökova Geometry- Topology Conference, Muğla, Türkiye
November 1996	Mathematics Symposium Held for the 85 th Birthday of Emeritus Professor Cahit Arf, İstanbul Technical University, İstanbul, Türkiye
October 1996	Mathematics Department, Bilkent University, Ankara, Türkiye <b>Title of Talk</b> : Localizations in the Equivariant Cohomology of $G$ -Spaces
August 1995	Mathematics Department, The University of Chicago, Chicago, IL, USA <b>Title of Talk</b> : An Extension of Dwyer-Wilkerson's Theorem on the Unstable Part of the Localized Equivariant Cohomology Ring of a $G$ -Space
June 1994	3rd International Workshop on Geometry and Arithmetic, Antalya, Türkiye <b>Title of Talk</b> : $G$ -Modules, $G$ -Spaces, and Betti Numbers
August 1993	International Center for Theoretical Physics, Trieste, Italy
August 1992	International Workshop on Arithmetic Number Theory, ICTP, Trieste, Italy

July 1992      1st International Workshop on Geometry and Arithmetic, Antalya Türkiye  
June 1992      Algebraic Topology and Geometric Topology, Northwestern University, Evanston, IL, USA  
May 1992      AMS Joint Meeting on Cohomology of Groups and its Relation to Algebraic  
Topology, Mount Holyoke College, Mount Holyoke, MA, USA  
January 1991    AMS Annual Meeting, Baltimore, MD, USA

## REFERENCES

Prof. Amir H. Assadi    Math. Dept., Univ. of Wisconsin, Madison, WI 53706 USA  
Prof. Gülin Ercan      Math. Dept., Middle East Technical Univ., Ankara 06800 Türkiye  
Prof. İsmail Güloğlu    Doğuş Üniversitesi, İstanbul, 34722, Türkiye  
Prof. Turgut Önder      Math. Dept., Middle East Technical Univ., Ankara 06800 Türkiye  
Prof. Ergün Yalçın      Math. Dept. Bilkent Univ. Ankara, 06800, Türkiye  
Prof. Steve Bauman     Math. Dept., Univ. of Wisconsin, Madison, WI 53706 USA

## REFEREEING

2022 MEB-TTK Taslak Kitap İnceleyici  
2014 TÜBİTAK 1001 Proje Hakemliğı  
2005 Gazi Üniversitesi Journal of Science  
2004 NSF Post Doctoral Fellowships  
2002 Anadolu Üniversitesi Bilim ve Teknoloji Dergisi