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#### International Researcher IDs

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Yoksis Researcher ID: [116723](https://yoksis.metu.edu.tr/yoksis/116723)

#### Education Information

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- I. Doctorate, Syracuse University, Syracuse University Graduate School , Physics Department, United States Of America 1999 - 2004
- II. Postgraduate, Middle East Technical University, Graduate School of Natural and Applied Sciences, Fizik (YI) (Tezli), Turkey 1997 - 1999
- III. Undergraduate Minor, Middle East Technical University, Faculty of Arts and Sciences, Department of Mathematics, Turkey 1995 - 1997
- IV. Undergraduate, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, Turkey 1993 - 1997

#### Foreign Languages

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- I. English, C1 Advanced

#### Research Areas

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Physics, Basic Particles and Areas, General Theory of Particles and Fields, Natural Sciences

#### Academic Titles / Tasks

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- I. Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2018 - Continues
- II. Associate Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2012 - 2018
- III. Assistant Professor, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2009 - 2012
- IV. Research Assistant PhD, Universitaet Hannover, Institut Für Theoretische Physik, Fizik, 2007 - 2009
- V. Research Assistant PhD, Dublin Institute for Advanced Studies, School of Theoretical Physics, 2004 - 2006
- VI. Research Assistant, Syracuse University, Faculty Of Arts And Sciences, Department Of Physics, 1999 - 2004
- VII. Research Assistant, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 1997 - 1999

## Academic and Administrative Experience

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- I. Head of Department, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2021 - Continues
- II. Deputy Head of Department, Middle East Technical University, Faculty of Arts and Sciences, Department of Physics, 2020 - 2021

## Courses

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- I. General Physics I, Undergraduate, 2024 - 2025, 2023 - 2024, 2017 - 2018, 2011 - 2012, 2010 - 2011, 2009 - 2010
- II. Methods of Mathematical Physics II, Doctorate, 2024 - 2025, 2019 - 2020
- III. General Physics II, Undergraduate, 2022 - 2023, 2021 - 2022, 2011 - 2012, 2010 - 2011, 2009 - 2010
- IV. String Theory II, Undergraduate, 2021 - 2022, 2019 - 2020, 2016 - 2017, 2011 - 2012
- V. Quantum Mechanics I, Postgraduate, 2021 - 2022, 2020 - 2021, 2019 - 2020, 2017 - 2018
- VI. Statistical Mechanics, Doctorate, 2022 - 2023, 2021 - 2022, 2020 - 2021
- VII. String Theory I, Undergraduate, 2021 - 2022, 2019 - 2020, 2017 - 2018, 2015 - 2016, 2011 - 2012
- VIII. Special Relativity, Undergraduate, 2020 - 2021
- IX. Quantum Mechanics II, Postgraduate, 2017 - 2018
- X. Electromagnetic Theory I, Postgraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015, 2013 - 2014
- XI. Quantum Field Theories On Fuzzy Spaces , Postgraduate, 2016 - 2017
- XII. Electromagnetic Theory II, Doctorate, 2016 - 2017, 2015 - 2016, 2014 - 2015
- XIII. Group Representations, Postgraduate, 2015 - 2016, 2012 - 2013
- XIV. Mathematical Methods in Physics II, Undergraduate, 2014 - 2015, 2013 - 2014, 2012 - 2013, 2011 - 2012, 2010 - 2011, 2009 - 2010
- XV. Mathematical Methods in Physics I, Undergraduate, 2014 - 2015, 2013 - 2014, 2012 - 2013, 2011 - 2012, 2010 - 2011, 2009 - 2010
- XVI. Elektromanyetik Teori, Undergraduate, 2013 - 2014
- XVII. Methods of Mathematical Physics, Postgraduate, 2012 - 2013

## Advising Theses

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- I. Kürkcüoğlu S., Synchronization of chaos through unpredictability in dynamical systems, Doctorate, K.BAŞKAN(Student), 2024
- II. Kürkcüoğlu S., Effects of non-abelian magnetic fields on pair production in flat and curved spaces, Postgraduate, B.ÖZCAN(Student), 2021
- III. Kürkcüoğlu S., Chaos in BFSS and ABJM matrix models, Postgraduate, C.TAŞCI(Student), 2021
- IV. Kürkcüoğlu S., Explorations in Yang-Mills matrix gauge theories with massive deformations, Doctorate, O.OKTAY(Student), 2019
- V. Kürkcüoğlu S., Chaos in Yang-Mills matrix models, Postgraduate, K.BAŞKAN(Student), 2019
- VI. KÜRKCÜOĞLU S., Equivariant reduction of matrix gauge theories and emergent chaotic dynamics, Postgraduate, G.Can(Student), 2018
- VII. Kürkcüoğlu S., LANDAU AND DIRAC-LANDAU PROBLEM ON ODD-DIMENSIONAL SPHERES, Postgraduate, Ü.Hasan(Student), 2017
- VIII. KÜRKCÜOĞLU S., Effective gauge theories from fuzzy extra dimensions, Doctorate, G.Ünal(Student), 2016
- IX. KÜRKCÜOĞLU S., QUANTUM HALL EFFECT ON GRASSMANN MANIFOLDS, Postgraduate, F.Balı(Student), 2014

## Designed Lessons

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- I. Kürkcüoğlu S., Quantum Field Theories On Fuzzy Spaces , Postgraduate, 2016 - 2017
- II. Kürkcüoğlu S., Sicim Teorisi 2, Undergraduate, 2011 - 2012
- III. Kürkcüoğlu S., Sicim Teorisi 1, Undergraduate, 2011 - 2012

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

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- I. **Review of twisted Poincare symmetry**  
Balachandran A., Kürkcüoğlu S., Vaidya S.  
EUROPEAN PHYSICAL JOURNAL-SPECIAL TOPICS, vol.232, no.23-24, pp.3761-3769, 2023 (SCI-Expanded)
- II. **Non-Abelian magnetic field and curvature effects on pair production**  
KÜRKCÜOĞLU S., ÖZCAN B., Unal G.  
PHYSICAL REVIEW D, vol.108, no.10, 2023 (SCI-Expanded)
- III. **Chaotic dynamics of the mass deformed ABJM model**  
Baskan K., Kürkcüoğlu S., Tasci C.  
PHYSICAL REVIEW D, vol.107, no.6, 2023 (SCI-Expanded)
- IV. **Chaos in the SU (2) Yang-Mills Chern-Simons matrix model**  
Başkan K., KÜRKCÜOĞLU S.  
Physical Review D, vol.104, no.6, 2021 (SCI-Expanded)
- V. **Chaos from massive deformations of Yang-Mills matrix models**  
Başkan K., Kürkcüoğlu S., Oktay O., Taşçı C.  
Journal of High Energy Physics, vol.2020, 2020 (SCI-Expanded)
- VI. **Extended dynamical symmetries of Landau levels in higher dimensions**  
KÜRKCÜOĞLU S., Unal G., YURDUŞEN İ.  
JOURNAL OF HIGH ENERGY PHYSICS, vol.2020, no.2, 2020 (SCI-Expanded)
- VII. **Magnetic field and curvature effects on pair production. I. Scalars and spinors**  
Karabali D., Kürkcüoğlu S., Nair V. P.  
PHYSICAL REVIEW D, vol.100, 2019 (SCI-Expanded)
- VIII. **Magnetic field and curvature effects on pair production. II. Vectors and implications for chromodynamics**  
Karabali D., KÜRKCÜOĞLU S., Nair V. P.  
PHYSICAL REVIEW D, vol.100, no.6, 2019 (SCI-Expanded)
- IX. **Chaos from equivariant fields on fuzzy S<sup>4</sup>**  
Coşkun Ü., Kürkcüoğlu S., Toga G., Ünal G.  
Journal of High Energy Physics, vol.2018, 2018 (SCI-Expanded)
- X. **Quantum Hall effect on odd spheres**  
Coskun U. H., Kürkcüoğlu S., Toga G. C.  
PHYSICAL REVIEW D, vol.95, 2017 (SCI-Expanded)
- XI. **U(3) gauge theory on fuzzy extra dimensions**  
Kürkcüoğlu S., Ünal G.  
PHYSICAL REVIEW D, vol.94, 2016 (SCI-Expanded)
- XII. **Equivariant fields in an SU(N) gauge theory with new spontaneously generated fuzzy extra dimensions**  
Kürkcüoğlu S., Ünal G.  
PHYSICAL REVIEW D, vol.93, 2016 (SCI-Expanded)
- XIII. **New fuzzy extra dimensions from SU(N) gauge theories**  
Kürkcüoğlu S.  
PHYSICAL REVIEW D, vol.92, 2015 (SCI-Expanded)

- XIV. **Spontaneous Lorentz violation: the case of infrared QED**  
Balachandran A. P., KÜRKCÜOĞLU S., de Queiroz A. R., VAÍDYA S.  
EUROPEAN PHYSICAL JOURNAL C, vol.75, no.2, 2015 (SCI-Expanded)
- XV. **Quantum Hall effect on the Grassmannians  $Gr(2)(C-N)$**   
Ballı F., Behtash A., Kürkcüoğlu S., Ünal G.  
PHYSICAL REVIEW D, vol.89, 2014 (SCI-Expanded)
- XVI. **SPONTANEOUS BREAKING OF LORENTZ SYMMETRY AND VERTEX OPERATORS FOR VORTICES**  
Balachandran A. P., Kürkcüoğlu S., De Queiroz A. R.  
MODERN PHYSICS LETTERS A, vol.28, 2013 (SCI-Expanded)
- XVII. **Equivariant reduction of  $U(4)$  gauge theory over  $S-F(2) \times S-F(2)$  and the emergent vortices**  
Kürkcüoğlu S.  
PHYSICAL REVIEW D, vol.85, 2012 (SCI-Expanded)
- XVIII. **Noncommutative vortices and flux tubes from Yang-Mills theories with spontaneously generated fuzzy extra dimensions**  
Kürkcüoğlu S.  
PHYSICAL REVIEW D, vol.82, 2010 (SCI-Expanded)
- XIX. **Equivariant reduction of Yang-Mills theory over the fuzzy sphere and the emergent vortices**  
Harland D., Kürkcüoğlu S.  
NUCLEAR PHYSICS B, vol.821, pp.380-398, 2009 (SCI-Expanded)
- XX. **Noncommutative Q-lumps**  
Kürkcüoğlu S.  
PHYSICAL REVIEW D, vol.78, 2008 (SCI-Expanded)
- XXI. **Noncommutative nonlinear sigma models and integrability**  
Kürkcüoğlu S.  
PHYSICAL REVIEW D, vol.78, 2008 (SCI-Expanded)
- XXII. **Interacting quantum topologies and the quantum Hall effect**  
Balachandran A. P., Gupta K. S., Kürkcüoğlu S.  
INTERNATIONAL JOURNAL OF MODERN PHYSICS A, vol.23, pp.1327-1336, 2008 (SCI-Expanded)
- XXIII. **Quantum aspects of the noncommutative Sine-Gordon model**  
Kürkcüoğlu S., LECHTENFELD O.  
Journal of High Energy Physics, vol.2007, no.9, 2007 (SCI-Expanded)
- XXIV. **Drinfeld twist and general relativity with fuzzy spaces**  
Kurkcuoğlu S., SAMANN C.  
CLASSICAL AND QUANTUM GRAVITY, vol.24, no.2, pp.291-311, 2007 (SCI-Expanded)
- XXV. **Noncommutative two-dimensional gravities**  
BALACHANDRAN A. P., GOVINDARAJAN T. R., GUPTA K. S., Kurkcuoğlu S.  
CLASSICAL AND QUANTUM GRAVITY, vol.23, no.20, pp.5799-5810, 2006 (SCI-Expanded)
- XXVI. **Nonlocal regularisation of noncommutative field theories**  
Govindarajan T. R., Kurkcuoğlu S., PANERO M.  
MODERN PHYSICS LETTERS A, vol.21, no.24, pp.1851-1863, 2006 (SCI-Expanded)
- XXVII. **Waves on noncommutative spacetimes**  
BALACHANDRAN A. P., GUPTA K. S., Kurkcuoğlu S.  
PHYSICAL REVIEW D, vol.73, no.2, 2006 (SCI-Expanded)
- XXVIII. **A fuzzy supersymmetric non-linear sigma model**  
Kurkcuoğlu S.  
INTERNATIONAL JOURNAL OF MODERN PHYSICS A, vol.19, no.31, pp.5359-5366, 2004 (SCI-Expanded)
- XXIX. **Topology change for fuzzy physics: Fuzzy spaces as Hopf algebras**  
BALACHANDRAN A., Kurkcuoğlu S.  
INTERNATIONAL JOURNAL OF MODERN PHYSICS A, vol.19, no.20, pp.3395-3407, 2004 (SCI-Expanded)
- XXX. **Non Linear Sigma Model on the Fuzzy Supersphere**  
KÜRKCÜOĞLU S.

JOURNAL OF HIGH ENERGY PHYSICS, vol.2004, pp.62, 2004 (SCI-Expanded)

XXXI. **Edge currents in non commutative Chern Simons theory from a new matrix model**

BALACHANDRAN A. P., GUPTA K. S., KÜRKCÜOĞLU S.

JOURNAL OF HIGH ENERGY PHYSICS, vol.2003, pp.7, 2003 (SCI-Expanded)

XXXII. **The Star Product on the Fuzzy Supersphere**

BALACHANDRAN A. P., KÜRKCÜOĞLU S., ROJAS E.

JOURNAL OF HIGH ENERGY PHYSICS, vol.2002, pp.56, 2002 (SCI-Expanded)

## Books & Book Chapters

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I. **Chapter 9: Chaos in the Mass-Deformed ABJM Model**

Kürkcüoğlu S.

in: Particles, Fields and Topology Celebrating A P Balachandran, T R Govindarajan (The Institute of Mathematical Sciences,India),Giuseppe Marmo (Federico II University of Naples,Italy),V Parameswaran Nair (The City College of New York,USA),Denjoe O'Connor (Dublin Institute for Advanced Study,Ireland),Sarada G Rajeev (University of Rochester,and Sachindeo Vaidya (Indian Institute of Science,Bangalore, Editor, World Scientific Publishing , Singapore, pp.93-103, 2023

II. **Lectures on Fuzzy and Fuzzy SUSY Physics**

Kürkcüoğlu S., Balachandran A., Vaidya S.

World Scientific Publishing , Singapore, 2007

## Refereed Congress / Symposium Publications in Proceedings

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I. **Chaos in Matrix Gauge Theories with Massive Deformations**

Başkan K., KÜRKCÜOĞLU S., Oktay O., Taşcı C.

20th Hellenic School and Workshops on Elementary Particle Physics and Gravity, CORFU 2021, Corfu, Greece, 29 August - 09 October 2021, vol.406

II. **Quantum Hall Effect on Odd-Dimensional Spheres**

KÜRKCÜOĞLU S.

International Workshop on Foundations of Quantum Mechnaics and Applications, 30 January - 10 February 2017

III. **Constructing the quantum Hall system on the Grassmannians  $Gr(2)(\mathbb{C}-N)$**

BALLI F., BEHTASH A., KÜRKCÜOĞLU S., ÜNAL G.

30th International Colloquium on Group Theoretical Methods in Physics (ICGTMP), Ghent, Belgium, 14 - 18 July 2014, vol.597

IV. **Equivariant Reduction of Gauge Theories over Fuzzy Extra Dimensions**

Kurkcuglu S.

7th International Conference on Quantum Theory and Symmetries (QTS), Prague, Czech Republic, 7 - 13 August 2011, vol.343

V. **Gauge Theories with Fuzzy Extra Dimensions and Noncommutative Vortices and Fluxons**

Kurkcuglu S.

5th International Workshop on Decoherence, Information, Complexity and Entropy (DICE) - Space-Time-Matter - Current Issues in Quantum Mechanics and Beyond, Tuscany, Italy, 13 - 17 September 2010, vol.306

VI. **Edge Currents in Non commutative Chern Simons Theory**

KÜRKCÜOĞLU S.

25th Annual Montreal-Rochester-Syracuse-Toronto Conference on High-Energy Physics (MRST 2003): JOEFEST in Celebration of the Joe Schechter's 65th Birthday, Syracuse, New York (USA), United States Of America, 13 - 15 May 2003

## Supported Projects

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- I. Kürkcüoğlu S., TÜBİTAK - AB COST Project, Cartan geometry, Lie, Integrable Systems, quantum group Theories for Applications (CaLISTA), 2022 - 2026
- II. Kürkcüoğlu S., TÜBİTAK - AB COST Project, Cartan geometry, Lie, Integrable Systems, quantum group Theories for Applications (CaLISTA) COST: CA21109, 2022 - 2026
- III. KÜRKCÜOĞLU S., TUBITAK Project, Matris Ayar Modelleri, Fuzzy Uzaylar ve Kaotik Dinamik, 2018 - 2021
- IV. KÜRKCÜOĞLU S., OKTAY O., Çelik U. C., Tasci C., BAŞKAN K., Project Supported by Higher Education Institutions, Yang Mills Matris Modelleri, Fuzzy Uzaylar ve Kaotik Dinamik, 2018 - 2020
- V. KÜRKCÜOĞLU S., TOĞA G. C., COŞKUN Ü. H., Project Supported by Higher Education Institutions, SU(N) Ayar Teorileri ve İlgili Matris Modellerinde Vakum Çözümleri ve Düşük Enerjili Etkin Eylemler, 2016 - 2016
- VI. KÜRKCÜOĞLU S., TUBITAK Project, Fuzzy Ekstra Boyutlu Uzaylarda Kuantum Alan Teorileri, 2011 - 2013
- VII. KÜRKCÜOĞLU S., Project Supported by Higher Education Institutions, Komutatif Olmayan Uzaylarda Kuantum Alan Teorileri, 2010 - 2010

## Scientific Refereeing

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- I. SCIENTIFIC REPORTS, SCI Journal, March 2018

## Mobility Activity

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- I. Other, Guest Researcher, Dublin Institute for Advanced Studies, Ireland, 2024 - 2024

## Metrics

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Publication: 40  
Citation (WoS): 248  
Citation (Scopus): 273  
H-Index (WoS): 10  
H-Index (Scopus): 10

## Invited Talks

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- I. Chaos in Matrix Gauge Theories with Massive Deformations, Conference, Corfu Summer Institute 2021 "School and Workshops on Elementary Particle Physics and Gravity" (CORFU2021) - Workshop on Quantum Geometry, Field Theory and Gravity, Greece, September 2021
- II. Chaos in Mass Deformed Yang Mills Matrix Models, Seminar, United States Of America, February 2021
- III. 18th Workshop on Quantization, Dualities and Integrable Systems, Conference, Turkey, October 2020
- IV. Chaotic Dynamics from Fuzzy Spheres, Seminar, Syracuse University, United States Of America, February 2019

## Scholarships

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- I. Fulbright Academic Research Grant, Fulbright Program, 2018 - 2019

## Awards

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- I. Kürkcüođlu S., TÜBA Gebip Ödülü, Tüba, June 2011
- II. Kürkcüođlu S., Doctoral Prize, Syracuse University Graduate School, May 2005

## Coaching Duties

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## Refereeing Duties

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