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International Researcher IDs

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Publons / Web Of Science ResearcherID: [D-1352-2010](#)

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Education Information

- 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

- I. English, C1 Advanced

Research Areas

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

Academic Titles / Tasks

- 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

- 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

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

Advising Theses

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

Designed Lessons

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

Published journal articles indexed by SCI, SSCI, and AHCI

- 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**
KÜRKÇÜOĞLU 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., KÜRKÇÜOĞLU 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., Taşcı C.
Journal of High Energy Physics, vol.2020, 2020 (SCI-Expanded)
- VI. **Extended dynamical symmetries of Landau levels in higher dimensions**
KÜRKÇÜOĞLU 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., KÜRKÇÜOĞLU S., Nair V. P.
PHYSICAL REVIEW D, vol.100, no.6, 2019 (SCI-Expanded)
- IX. **Chaos from equivariant fields on fuzzy S 4**
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., KÜRKÇÜOĞLU S., de Queiroz A. R., VAİDYA 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**
Kurkcuglu 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., Kurkcuglu 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., Kurkcuglu 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., Kurkcuglu S.
PHYSICAL REVIEW D, vol.73, no.2, 2006 (SCI-Expanded)
- XXVIII. **A fuzzy supersymmetric non-linear sigma model**
Kurkcuglu 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., Kurkcuglu 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**
KÜRKÇÜOĞLU 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., KÜRKÇÜOĞLU S.
JOURNAL OF HIGH ENERGY PHYSICS, vol.2003, pp.7, 2003 (SCI-Expanded)

- XXXII. **The Star Product on the Fuzzy Supersphere**
BALACHANDRAN A. P., KÜRKÇÜOĞLU S., ROJAS E.
JOURNAL OF HIGH ENERGY PHYSICS, vol.2002, pp.56, 2002 (SCI-Expanded)

Books & Book Chapters

- I. **Chapter 9: Chaos in the Mass-Deformed ABJM Model**
Kürkçüoğlu 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**
Kürkçüoğlu S., Balachandran A., Vaidya S.
World Scientific Publishing, Singapore, 2007

Refereed Congress / Symposium Publications in Proceedings

- I. **Chaos in Matrix Gauge Theories with Massive Deformations**
Başkan K., KÜRKÇÜOĞLU 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**
KÜRKÇÜOĞLU S.
International Workshop on Foundations of Quantum Mechanics 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., KÜRKÇÜOĞLU 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**
Kurkcuoglu 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**
Kurkcuoglu 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**
KÜRKÇÜOĞLU 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

- I. Kürkçüoğlu S., TÜBİTAK - AB COST Project, Cartan geometry, Lie, Integrable Systems, quantum group Theories for

Applications (CaLISTA), 2022 - 2026

- II. KÜRKÇÜOĞLU S., TUBITAK Project, Matris Ayar Modelleri, Fuzzy Uzaylar ve Kaotik Dinamik, 2018 - 2021
- III. KÜRKÇÜOĞLU 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
- IV. KÜRKÇÜOĞLU 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
- V. KÜRKÇÜOĞLU S., TUBITAK Project, Fuzzy Ekstra Boyutlu Uzaylarda Kuantum Alan Teorileri, 2011 - 2013
- VI. KÜRKÇÜOĞLU S., Project Supported by Higher Education Institutions, Komutatif Olmayan Uzaylarda Kuantum Alan Teorileri, 2010 - 2010

Scientific Refereeing

- I. SCIENTIFIC REPORTS, SCI Journal, March 2018

Metrics

Publication: 40
Citation (WoS): 242
Citation (Scopus): 264
H-Index (WoS): 9
H-Index (Scopus): 10

Invited Talks

- 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

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

Awards

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

Coaching Duties

Refereeing Duties

Non Academic Experience

- I. City College of New York
- II. Leibniz Universitat Hannover Institut fur Theoretische Physik
- III. Dublin Institute for Advanced Studies
- IV. Syracuse University
- V. Orta Dogu Teknik Universitesi