



# Suat DENGİZ, PhD

## Curriculum Vitae

### Education and Professional Experiences

- 2015-2016 **Postdoctoral Researcher**, Massachusetts Institute of Technology (MIT), Laboratory for Nuclear Science, CTP,  
**Research Titles:** Alternative quantum gravity approaches / Faddeev-Jackiw quantization for the spin- $\frac{3}{2}$  quantum fields / (Holographic) soft particle approaches  
**Advisor:** Prof. Roman JACKIW.
- 2014-2015 **Postdoctoral Researcher**, Middle East Technical University, Department of Physics,  
**Research Titles:** Weyl-gauged quantum gravity models / Geometric flows  
**Advisor:** Prof. Bayram TEKIN.
- 2011-2014 **PhD in Physics**, Middle East Technical University,  
**Title:** Weyl-invariant higher curvature gravity theories in  $n$  dimensions and mass generation via symmetry breaking  
**Supervisor:** Prof. Bayram TEKIN.
- 2009-2011 **Master in Physics**, Middle East Technical University,  
**Title:** 3+1 orthogonal and conformal decomposition of Einstein equation and ADM formalism for general relativity  
**Supervisor:** Prof. Bayram TEKIN.
- 2004-2008 **Bachelor in Physics Engineering**, Hacettepe University,  
**Undergrad Research Topic:** Cartan algebra, p-forms and connections  
**Advisor:** Prof. Metin ONDER.

### Working Experiences

- 2018 **Associate Professor in Mathematical Physics**, The Turkish Council of Higher Education (YÖK).  
October-
- 2018- **Physics Group Coordinator**, University of Turkish Aeronautical Association.
- 2018- **Assistant Professor**, University of Turkish Aeronautical Association, Department of Mechanical Engineering.
- 2017-2018 **Part-Time Lecturer**, Eastern Mediterranean University, Departments of Physics and Chemistry (N. Cyprus).
- 2011-2014 **Project Assistant**, Middle East Technical University, Department of Physics.  
◦ Cosmology of Born-Infeld-type gravity theories, 113F155 supported by The Scientific And Technological Research Council of Turkey (TUBITAK) 2013-2014.  
◦ Determining spin parameter of the black hole system XTE J 1550-564 from the X-ray spectrum, 109T748 supported by TUBITAK 2011-2013 (Coordinator: Prof. Altan BAYKAL).
- 2010-2013 **Lecturer**, Middle East Technical University, Department of Physics.  
◦ Several informal group lectures on "gravity and quantum field theories"

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- 2012-2013 **Teaching Assistant**, Middle East Technical University, Department of Physics.  
 ◦ Methods of Mathematical Physics II (Ph.D. Course).
- 2011-2012 **Teaching Assistant**, Middle East Technical University, Department of Physics.  
 ◦ Methods of Mathematical Physics I (M.Sc. Course).
- 2009-2011 **Teaching Assistant**, Middle East Technical University, Department of Physics.  
 ◦ Fundamental Physics Laboratories.

## Publications and Pre-prints

1. Atanu Bhatta, Shankhadeep Chakraborty, S. Dengiz and E. Kilicarslan, “*High Temperature Behavior of non-Local Observables of Strongly Coupled Boosted Fluid: A Holographic Study*,” **in preparation (2019)**.
2. S. Dengiz, “*Note on soft photons and Faddeev-Jackiw symplectic reduction of quantum electrodynamics in the eikonal limit*,” **Int.J.Mod.Phys. A33 (2018) 1830020**.
3. S. Dengiz, “*A Note on Noncompact and Nonmetricity Quadratic Curvature Gravity Theories*,” **Turk J Phys, 42, (2018), 70-77**.
4. S. Dengiz, “*A Noncompact Weyl-Einstein-Yang-Mills Model: A Semiclassical Quantum Gravity*,” MIT-CTP-4834, **Annals of Physics 383C (2017) 560-578**.
5. S. Dengiz, “*Faddeev-Jackiw Hamiltonian Reduction for Free and Gauged Rarita-Schwinger Theories*,” MIT-CTP-4768, **Eur. Phys. J. C (2016) 76:566**.
6. E. Kilicarslan, S. Dengiz and B. Tekin, “*More on Cotton flow*,” **JHEP 1506 (2015) 136**.
7. S. Dengiz, E. Kilicarslan and B. Tekin, “*Scattering in Topologically Massive Gravity, Chiral Gravity and the Anyon-Anyon Potential Energy*,” **Phys. Rev. D 89, 024033 (2014)**.
8. S. Dengiz, E. Kilicarslan and B. Tekin, “*Weyl-gauging of Topologically Massive Gravity*,” **Phys. Rev. D 86, 104014 (2012)**.
9. M.R. Tanhayi, S. Dengiz and B. Tekin, “*Weyl-Invariant Higher Curvature Gravity Theories in n Dimensions*,” **Phys. Rev. D 85, 064016 (2012)**.
10. M.R. Tanhayi, S. Dengiz and B. Tekin, “*Unitarity of Weyl-Invariant New Massive Gravity and Generation of Graviton Mass via Symmetry Breaking*,” **Phys. Rev. D 85, 064008 (2012)**.
11. S. Dengiz and B. Tekin, “*Higgs Mechanism for New Massive Gravity and Weyl-Invariant Extensions of Higher Derivative Theories*,” **Phys. Rev. D 84, 024033 (2011)**.

## Editorial Board and Referee Duties

### Member of Editorial Board

1. Science Research Association (SCIREA) Journal of Physics.
2. International Journal of High Energy Physics.

### Referee for

1. Physica Scripta.
2. Advances in High Energy Physics.
3. International Journal of Theoretical Physics.
4. Central European Journal of Physics.

## Workshops, Conferences and Lectures

### Conferences, Talks and Seminars Organized

1. Member of Organizing and Scientific Committee, **The 2nd Physics Days Meeting**, Eastern Mediterranean University, Famagusta, Northern Cyprus, March 21-22, 2019.
2. Speaker: Soner Albayrak, YALE, “*Light-cone Limit Analysis of Four Fermion Point Functions*” **Mechanical Engineering and Astronautical Engineering Joint Applied Science Seminar**, University of Turkish Aeronautical Association, Ankara, May 29, 2018.

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3. Speaker: Prof. Dr. Altan Baykal, Middle East Technical University, “*Neutron Star Interior and Exterior Torque Mechanism*” **Mechanical Engineering and Astronautical Engineering Joint Applied Science Seminar**, University of Turkish Aeronautical Association, Ankara, May 11, 2018.
4. Speaker: Prof. Dr. Altug Ozpineci, Middle East Technical University, “*Accelerators: Their Industry Applications and Particle Physics*” **Mechanical Engineering and Astronautical Engineering Joint Applied Science Seminar**, University of Turkish Aeronautical Association, Ankara, May 09, 2018.
5. Speaker: Prof. Dr. Sitki Cagdas Inam, Baskent University, “*X-ray Astronomy and NASA’s Mission*” **Mechanical Engineering and Astronautical Engineering Joint Applied Science Seminar**, University of Turkish Aeronautical Association, Ankara, April 25, 2018.
6. Speaker: Bilge Tuncel, Middle East Technical University, “*Thermal Modeling of PV Module Temperature and Yield and Its Verification*” **Mechanical Engineering and Astronautical Engineering Joint Applied Science Seminar**, University of Turkish Aeronautical Association, Ankara, April 18, 2018.
7. Speaker: Prof. Dr. Bulent G. Akinoglu, Middle East Technical University, “*Toward Renewable Energy: Do Water, Wind and Sun on Earth Have Enough Potential to Supply Future Energy Demand?*” **Mechanical Engineering and Astronautical Engineering Joint Applied Science Seminar**, University of Turkish Aeronautical Association, Ankara, April 11, 2018.

### National and International Meetings Attended or Talks Given

1. S.Dengiz, “*Edge of Universe: Black Holes*”, **Seminar**, Baskent University, Faculty of Engineering, Ankara, April 26, 2019. (*Invited Speaker*).
2. S.Dengiz, “*The Theory of Everything*”, **Seminar**, Middle East Technical University, Department of Chemistry (The Dengiz Research Group), Ankara, January 02, 2019. (*Invited Speaker*).
3. S.Dengiz, “*Her şeyin Teorisi*”, **Seminar**, University of Turkish Aeronautical Association IEEE ve AESS Student Communities, Ankara, December 20, 2018.
4. S. Dengiz, “*Weyl-gauged Topologically Massive Gravity*”, **16th Workshop on Dualities and Integrable Systems**, Mimar Sinan Fine Arts University, Istanbul, April 21-23, 2018. (*Talk Given*).
5. S. Dengiz, “*Weyl-gauged Higher Curvature Gravity Theories and the Spontaneous Generation of Masses of Particles*”, **Physics Departmental Seminar**, Mimar Sinan Fine Arts University, Istanbul, December 29, 2016, Turkey. (*Talk Given*).
6. **The International Workshop on Flat Holography**, The Simons Center for Geometry and Physics, Stony Brook University, New York, April 4-8, 2016, USA.
7. **The Morris Loeb Lectures in Physics: "Black Holes, Gravity and Quantum System"**, Harvard University, Cambridge, March 21-25, 2016, USA. (*Lecturer: Juan MALDACENA*).
8. **The Spring 2016 Course: The Infrared Structure of Gravity and Gauge Theory**, Harvard University, Cambridge, Spring, 2016, USA. (*Lecturer: Andrew STROMINGER*).
9. **Several Talks on High Energy Physics**, MIT, Center for Theoretical Physics/Laboratory for Nuclear Science, Cambridge, 2015-2016, USA.
10. S. Dengiz, “*Weyl-gauging of Higher Derivative Theories and Spontaneous Symmetry Breaking*”, **The National Workshop: High Energy Physics Days**, Middle East Technical University, Ankara, February 12-14, 2015, Turkey. (*Talk Given*).
11. **13th Workshop on Quantization, Dualities and Integrable Systems**, Koc University, Istanbul, April 19-20, 2014, Turkey.
12. S. Dengiz, “*Higgs-type mechanism for graviton*”, **11th Workshop on Quantization, Dualities and Integrable Systems**, Pamukkale University, Denizli, April 21-23, 2012, Turkey. (*Talk Given*).

13. S. Dengiz, “*Higgs Mechanism for New Massive Gravity and Weyl-invariant Extensions of Higher Derivative Theories*”, **The National Workshop: High Energy Physics Days**, Ankara University, Ankara, December 27-30, 2011, Turkey. (*Talk Given*).
14. S. Dengiz, “*Higgs Mechanism for Weyl-gauged Higher Curvature Gravity Theories*”, **The International Workshop on Recent Advances in Quantum Field and String Theories**, Free University, Tbilisi, September 26-30, 2011, Georgia. (*Invited Speaker*).
15. **The International Conference on Strings, Branes and Supergravity**, Koc University, Istanbul, August 1-5, 2011, Turkey.
16. **9th Workshop on Quantization, Dualities and Integrable Systems**, Yeditepe University, Istanbul, April 23-25, 2010, Turkey.

### Other Meetings The Publications Presented

1. S. Dengiz, E. Kilicarslan and B. Tekin, “*Interactions Between The Topologically Massive Gravitational Anyons in 2+1-Dimensions*”, **National Workshop: High Energy Physics Days**, Middle East Technical University, Ankara, February 12-14, 2015, Turkey. (*Speaker: E. Kilicarslan*).
2. S. Dengiz, E. Kilicarslan and B. Tekin, “*Unification of Topologically Massive Gravity and Topologically Massive Gauge Theory*”, **12th Workshop on Dualities and Integrable Systems**, Koc University, Istanbul, April 20, 2013. (*Speaker: E. Kilicarslan*).
3. S. Dengiz and B. Tekin, “*Higgs Mechanism for NMG and Weyl invariant Extensions of Higher Derivative Theories*”, **International Workshop: Extra Dimensions in the Era of the LHC**, Osaka University, Osaka, Japan, December 12-14, 2011. (*Speaker: B. Tekin*).

### Courses Given

- Spring, 2019 ***Physics-II***, University of Turkish Aeronautical Association (Undergraduate).  
 Fall, 2018 ***Physics-I***, University of Turkish Aeronautical Association (Undergraduate).  
 Smr, 2018 ***Physics-II***, University of Turkish Aeronautical Association (Undergraduate).  
 Spring, 2018 ***Dynamics***, University of Turkish Aeronautical Association (Undergraduate).  
 Spring, 2018 ***Physics-II***, University of Turkish Aeronautical Association (Undergraduate).  
 Fall, 2017 ***Special Topics in General Relativity-IV***, Eastern Mediterranean University (PhD Course/N. Cyprus).  
 ○ **The topics covered:** General relativity; Black holes and their conformal diagrams; Conformal gravity, higher curvature gravity theories, topologically massive gravity and chiral gravity; Conserved charges; QFT in curved spacetimes, Unruh effect, Hawking effect and black hole evaporation; Soft hairs on black holes.  
 Fall, 2017 ***Physics-I***, Eastern Mediterranean University (N. Cyprus) (Undergraduate).  
 Fall, 2017 ***Physics-II***, Eastern Mediterranean University (N. Cyprus) (Undergraduate).

### Computer Skills

Advanced L<sup>A</sup>T<sub>E</sub>X, Linux, Mathematica, MS Office, MS Windows.

### Languages

Advanced **English**.

### Research Area and Scientific Interests

**Theoretical High Energy and Mathematical Physics.**

1. Classical and Quantum Gravity.
2. Quantum Field Theories.
3. Cosmology and Black Holes.
4. Holographic Information Encoding

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## References

- ***Prof. Roman JACKIW***, Massachusetts Institute of Technology (MIT), Laboratory for Nuclear Science, Center for Theoretical Physics.
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- ***Prof. Bayram TEKIN***, Middle East Technical University, Department of Physics.
  - Email: btekin@metu.edu.tr, Phone: +90 312 210 4340.
- ***Prof. Atalay KARASU***, Middle East Technical University, Department of Physics.
  - Email: karasu@metu.edu.tr, Phone: +90 312 210 3295.
- ***Prof. Mehmet ZEYREK***, Middle East Technical University, Department of Physics (Vice Rector).
  - Email: zeyrek@metu.edu.tr, Phone: +90 312 210 5073.
- ***Prof. Altan BAYKAL***, Middle East Technical University, Department of Physics.
  - Email: altan@astroa.physics.metu.edu.tr, Phone: +90 312 210 5077.
- ***Prof. Ayse KALKANLI KARASU***, Middle East Technical University, Department of Physics.
  - Email: akarasu@metu.edu.tr, Phone: +90 312 210 5070.
- ***Prof. Metin ONDER***, Hacettepe University, Department of Physics Engineering.
  - Email: onder@hacettepe.edu.tr, Phone: +90 312 297 7260.
- ***Prof. Muge BOZ EVINAY***, Hacettepe University, Department of Physics Engineering.
  - Email: mugeboz@hacettepe.edu.tr, Phone: +90 312 297 7200.
- ***Prof. Fatih YASAR***, Hacettepe University, Department of Physics Engineering.
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