

Education

- 2014 – 2019 **PhD**, *Syracuse University*, Syracuse, New York, US
Thesis title: Relevant Operators of Particle Physics and Cosmology
Thesis advisor: Prof. Jay Hubisz
- 2010 – 2013 **Master of Science**, *Boğaziçi University Department of Physics*, İstanbul, Türkiye
Thesis advisor: Exact Renormalization Group on Point Interactions
Thesis advisor: Prof. Osman Teoman Turgut
- 2005 – 2010 **Bachelor of Science**, *Istanbul Technical University, Faculty of Electrical and Electronics Engineering*, İstanbul, Türkiye
Thesis title: Corona Losses
Thesis advisor: Prof. Aydoğan Özdemir

Research experience

- 2022 – **Co-Funded Brain Circulation2 Scheme (CoCirculation2) Fellow**, *Istanbul Technical University, Department of Physics Engineering*, İstanbul, Türkiye
This is a European Commission Horizon 2020 Marie Skłodowska-Curie Actions Cofund program introduced by the Turkish Scientific and Technological Research Council (TÜBİTAK)
Project title: Revisiting the power spectrum of fuzzy dark matter on small scales
- 2019 – 2022 **Postdoctoral Fellow**, *Deutsches Elektronen-Synchrotron (DESY)*, Hamburg, Germany
Working in the group of Géraldine Servant on light dark matter.
- 2016 – 2019 **Visiting scientist**, *Cornell University*, Ithaca, New York, ABD
Worked with Prof. Csaba Csáki on the phenomenological implications of gravitational wave observables.
- 2016 – 2019 **Research assistant**, *Syracuse University, Department of Physics*, Syracuse, New York, US
Worked with Prof. Jay Hubisz on the extensions of the Standard Model.

Publications

- A. Chatrchyan, C. Eröncel, M. Koschnitzke and G. Servant, *ALP dark matter with non-periodic potentials: parametric resonance, halo formation and gravitational signatures*, [2305.03756](#).
- C. Eröncel, J. Hubisz, S.J. Lee, G. Rigo and B. Sambasivam, *New Horizons in the Holographic Conformal Phase Transition*, [2305.03773](#).
- C. Eröncel and G. Servant, *ALP dark matter mini-clusters from kinetic fragmentation*, *JCAP* **01** (2023) 009 [[2207.10111](#)].
- C. Eröncel, R. Sato, G. Servant and P. Sørensen, *ALP dark matter from kinetic fragmentation: opening up the parameter window*, *JCAP* **10** (2022) 053 [[2206.14259](#)].
- C. Eröncel, J. Hubisz and G. Rigo, *Radion-activated Higgs mechanism*, *Phys. Rev. D* **101** (2020) 055041 [[1912.11053](#)].
- C. Eröncel, J. Hubisz and G. Rigo, *Self-Organized Higgs Criticality*, *JHEP* **03** (2019) 046 [[1804.00004](#)].
- C. Csáki, C. Eröncel, J. Hubisz, G. Rigo and J. Terning, *Neutron Star Mergers Chirp About Vacuum Energy*, *JHEP* **09** (2018) 087 [[1802.04813](#)].
- O.T. Turgut and C. Eröncel, *Exact Renormalization Group for Point Interactions*, *Acta Polytech.* **54** (2014) 156 [[1412.8623](#)].

Academic Talks

- November 2022 **ALP Dark Matter from Kinetic Fragmentation**
Mainz Theorie Seminar
Online
- September 2022 **ALP Dark Matter from Kinetic Fragmentation**
MADMAX Collaboration Meeting
Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany
- July 2022 **ALP Dark Matter from Kinetic Fragmentation**
PASCOS 2022, the 27th International Symposium on Particles, Strings and Cosmology
Max Planck Institute for Nuclear Physics, Heidelberg, Germany
- May 2022 **ALP Dark Matter from Kinetic Fragmentation**
Second EuCAPT Annual Symposium
Online
- August 2021 **Fragmentation of the axion field in the early universe**
Mini Workshop on “Inflationary (P)-Reheating as Probe of BSM”, Majorana-Raychaudhuri Seminars
Online
- July 2021 **Fragmentation of the axion field in the early universe**
EPS-HEP Conference 2021
Online
- June 2021 **Fragmentation of the axion field in the early universe**
16th Patras Workshop on Axions, WIMPs, and WISPs
Online
- June 2021 **Fragmentation of the axion field in the early universe**
PASCOS 2021
Online
- September 2020 **Dark matter from axion fragmentation, DESY, Hamburg, Germany**
DESY Theory Forum 2020 (invited speaker)
Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany
- September 2019 **Neutron Star Mergers Chirp About Vacuum Energy, DESY, Hamburg, Germany**
DESY Theory Workshop 2019: Quantum field theory meets gravity (invited talk)
Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany
- May 2019 **Radion-Activated Higgs Mechanism**
27th International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2019) (invited speaker)
Texas A&M University, Corpus Christi, Texas, US
- May 2018 **Self-Organized Higgs Criticality, Pittsburgh University, Pittsburgh, PA, US**
Phenomenology 2018 Symposium
Pittsburgh University, Pittsburgh, Pennsylvania, US

Teaching activities (University)

- Spring 2023 **Axions and Axion-Like-Particles (Instructor)**, *Istanbul Technical University*, İstanbul, Türkiye
- 2019 — 2022 **Co-advisor for a Master thesis**, *DESY*, Hamburg, Germany
I am co-advised a master student of University of Hamburg for his master thesis.
Thesis title: Cosmological Evolution of Axion-Like Particles with Non-Periodic Potential: Parametric Resonance, Halo Formation and Gravitational Signatures
- Fall 2017 **Thermodynamics & Statistical Mechanics (undergraduate, assistant)**, *Syracuse University*, Syracuse, NY, US
Graded and wrote the solution manuals for the homeworks
- Fall 2017 **Quantum Mechanics I (graduate, assistant)**, *Syracuse University*, Syracuse, NY, US
Graded the homeworks, attended a couple of recitation sessions.
- Spring 2019, **Major Concepts of Physics II (undergraduate, assistant)**, *Syracuse University*, Syracuse, NY, US
2017, 2016, Designed and instructed the lab sections, graded lab reports, homeworks, and exams.
2015
- Fall 2015 **Our Corner of the Universe (undergraduate, assistant)**, *Syracuse University*, Syracuse, NY, US
Instructed the lab sections, graded the lab reports, and exams.
- Fall 2015 **Quantum Mechanics I (graduate, assistant)**, *Syracuse University*, Syracuse, NY, US
Graded the homeworks.
- Fall 2014 **General Physics II (undergraduate, assistant)**, *Syracuse University*, Syracuse, NY, US
Instructed the recitation sections, graded the exams.

Teaching activities (others)

- September **Cosmology of Axion-Like-Particles**, *Online*
2022 I gave a lecture at the Advanced Topics in Theoretical Physics 2022 Summer School as an invited speaker. <https://doi.org/10.5281/zenodo.7116272>
- September **Spinors and gauge fields**, *Online*
2020 Invited lecturer at QFT Summer School organized by Boğaziçi University.

Schools and Workshops

- May 2023 **Axions across boundaries between Particle Physics, Astrophysics, Cosmology and forefront Detection Technologies**, *workshop*
The Galileo Galilei Institute for Theoretical Physics, Firenze, Italy
- July 2018 **Higgs: From Mass to Cosmology**, *summer school*
Institut d'Etudes Scientifiques de Cargese, Cargese, France
- January 2018 **GGI Lectures on the Theory of Fundamental Interactions**, *winter school*
The Galileo Galilei Institute for Theoretical Physics, Firenze, Italy
- July 2017 **Prospects in Theoretical Physics: Particle Physics at the LHC and Beyond**, *summer school*
Institute of Advanced Study, Princeton, NJ, USA
- September 2013 **Feza Gürsey Summer School on Group Theory**
Feza Gürsey Institute, İstanbul, Türkiye
- August 2013 **International School of Exact and Numerical Models of Low Dimensional Quantum Structures**, *summer school*
Institute of Theoretical and Applied Physics (ITAP), Marmaris, Türkiye
- July 2012 **International School on Strings and Fundamental Physics (SFP'12)**, *summer school*
Deutsches Elektronen-Synchrotron (DESY), Hamburg, Germany
- February 2012 **I. Uludağ Winter School on High Energy Physics**
Uludağ University, Bursa, Türkiye
- February 2011 **International School of Theory & Analysis in Particle Physics**, *summer school*
Doğuş University, İstanbul, Türkiye

Languages

- Turkish Mother tongue
- English Advanced in speaking and writing
- German Intermediate in speaking and writing