

# Soner Albayrak

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## ACADEMIC POSITIONS

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<b>Middle East Technical University, Ankara, Turkey</b> Doktor Öğretim Üyesi (Assistant Professor)	2023 - present
<b>University of Amsterdam, Amsterdam, Netherlands</b> Onderzoeker (Researcher)	Sep 2021 - Sep 2023 (Contact: Daniel Baumann)
<b>National Taiwan University, Taipei, Taiwan</b> Visiting Researcher	Apr 2023 - Jun 2023 (Contact: Yu-tin Huang)

## ACADEMIC AND PROFESSIONAL PREPARATION

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<b>Yale University, New Haven, USA</b> Doctor of Philosophy in Physics Dissertation title: <i>Analytic Studies of Fermions in the Conformal Bootstrap</i> Master of Philosophy in Physics Master of Science in Physics	Agu 2016 - Jun 2021 (Advisor: David Poland)
<b>California Institute of Technology, Pasadena, USA</b> Visiting Student Researcher Simons Bootstrap Collaboration Graduate Student Exchange	Jul 2018 - Jun 2019 (Host: David Simmons Duffin)
<b>Middle East Technical University, Ankara, Turkey</b> Master of Science in Physics Thesis: <i>A Lorentz Violating Theory: Its Nonminimal Extension in the Photon Sector</i> Bachelor of Science in Physics Bachelor of Science in Electrical & Electronics Engineering	Sep 2008 - Feb 2016 (Advisor: İsmail Turan)

## CURRENT RESEARCH INTERESTS

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Conformal bootstrap	AdS/CFT
Cosmological bootstrap	Scattering amplitudes

## PEER REVIEWED PUBLICATIONS

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- S. Albayrak** and S. Kharel, *All plus four point (A)dS graviton function using generalized on-shell recursion relation*, [JHEP 05 \(2023\) 151](#)
- S. Albayrak**, Rajeev Erramilli, Zhijin Li, David Poland and Yuan Xin, *Bootstrapping  $N_f = 4$  conformal QED<sub>3</sub>*, [Phys.Rev.D 105 \(2022\)](#)
- S. Albayrak**, S. Kharel and D. Meltzer, *On duality of color and kinematics in (A)dS momentum space*, [JHEP 03 \(2021\) 249](#)
- S. Albayrak**, C. Chowdhury and S. Kharel, *On loop celestial amplitudes for gauge theory and gravity*, [Phys.Rev.D 102 \(2020\)](#)

**S. Albayrak** and S. Kharel, *Spinning loop amplitudes in Anti-de Sitter space*, [Phys.Rev.D 103 \(2021\) 2](#)

**S. Albayrak**, D. Meltzer and D. Poland, *The Inversion Formula and 6j Symbol for 3d Fermions*, [JHEP 09 \(2020\) 148](#)

**S. Albayrak**, C. Chowdhury and S. Kharel, *Study of momentum space scalar amplitudes in AdS spacetime*, [Phys.Rev.D 101 \(2020\) 12](#)

**S. Albayrak** and S. Kharel, *Towards the higher point holographic momentum space amplitudes. Part II. Gravitons*, [JHEP 12 \(2019\) 135](#)

**S. Albayrak**, C. Chowdhury and S. Kharel, *New relation for Witten diagrams*, [JHEP 10 \(2019\) 274](#)

**S. Albayrak**, D. Meltzer and D. Poland, *More Analytic Bootstrap: Nonperturbative Effects and Fermions*, [JHEP 08 \(2019\) 040](#)

**S. Albayrak** and S. Kharel, *Towards the higher point holographic momentum space amplitudes*, [JHEP 02 \(2019\) 040](#)

#### CONFERENCES & PRESENTATIONS

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Bootstrap 2023, ICTP – SAIFR	Jul 2023
National Taiwan University, seminar	May 2023
Invited Talk: <i>A geometric approach to the perturbative unitarity in cosmology</i>	
Middle East Technical University, seminar	Mar 2023
Invited Talk: <i>Extending the flat space techniques to curved spacetimes</i>	
University of Amsterdam String Theory Journal Club	Feb 2023
Talk: <i>Conformal QED in 3d: The Numerical Bootstrap Approach</i>	
Positivity, Princeton Center for Theoretical Science	Dec 2022
Bootstrapping Nature, Galileo Galilei Institute	Nov 2022
Invited Talk: <i>Inverting the 3d Fermions</i>	
ATITPhysics 2022S, online school	Sep 2022
Colloquium: <i>Problems in Theoretical Physics</i>	
Middle East Technical University, online seminar	Jun 2022
Invited Talk: <i>Conformal QED in 3d: The Numerical Bootstrap Approach</i>	
20 <sup>th</sup> Workshop on Quantization, Dualities and Integrable Systems, online seminar	Apr 2022
Talk: <i>Conformal QED in 3d: The Numerical Bootstrap Approach</i>	
Holography@D-ITP meetings, Utrecht University	Apr 2022
Invited Talk: <i>Conformal QED in 3d: The Numerical Bootstrap Approach</i>	
Case Western Reserve University, online seminar	Apr 2022
Invited Talk: <i>Conformal QED in 3d: The Numerical Bootstrap Approach</i>	
Boundaries and Defects in CFT and Holography, online school	Mar 2022

ICTP – School on Superstring Theory and Related Topics, online school	Oct 2021
University of Amsterdam String Theory Journal Club	Oct 2021
Talk: <i>Fermions in CFTs: The Analytic Bootstrap Approach</i>	
International Society for Quantum Gravity, online meeting	Oct 2021
All Lambdas Holography @ Prague, online workshop	Oct 2021
ATITPhysics 2021, online school	Sep 2021
Lecture Series: <i>Conformal Symmetry in Field Theories</i>	
Bootstrap 2021, online conference	Jul 2021
19 <sup>th</sup> Workshop on Quantization, Dualities and Integrable Systems, online seminar	Apr 2021
Talk: <i>Fermions in CFTs: The Analytic Bootstrap Approach</i>	
THK University, online seminar	Mar 2021
Invited Talk: <i>Simetriler: Niçin evrenimiz böyle?</i>	
Porto University, online seminar	Feb 2021
Invited Talk: <i>On Witten diagrams in momentum space</i>	
Bootstrap 2020, online conference	Jun 2020
Middle East Technical University, online seminar	Nov 2020
Invited Talk: <i>Recent Developments in Conformal Bootstrap</i>	
Zoomplitudes 2020, online conference	May 2020
Online seminar series in theoretical physics in Turkey	May 2020
Talk: <i>Recent Developments in Conformal Bootstrap</i>	
Developments in the Numerical Bootstrap, SCGP-Stony Brook	Nov 2019
Bootstrap 2019, Perimeter Institute	Jul 2019
Bootstrap 2018, California Institute of Technology	Jul 2018
Analytic approaches to the bootstrap, Azores	May 2018
Particle theory group student talk: <i>On Wess-Zumino-Witten model</i> , Yale	Mar 2018
Signals for Nonminimal Lorentz and CPT Violation, IUCSS	Jun 2015
Poster presentation: <i>CPT-odd Photon in Vacuum-Orthogonal Model</i>	
Ankara High Energy Physics Days, METU	Feb 2015
Talk: <i>CPT Violating QED and Beyond</i>	
Recent Developments in High Energy Physics, METU	May 2013

#### AWARDS AND SCHOLARSHIPS

National Graduate Study Scholarship	2014
by Scientific and Technological Research Council of Turkey	
Graduate Courses Performance Award	2014
by Middle East Technical University	
Dean's Honor and High Honor Lists	2009-2013
Outstanding Success Scholarship's	2008
by METU, by Turkish Educational Foundation, and by Ministry of Youth and Sports	

## EXPERIENCE

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<b>Instructor</b> , Middle East Technical University	2023-current
PHYS 209: <i>Mathematical Methods in Physics I</i>	Fall 2023
PHYS 105: <i>General Physics I</i>	Fall 2023
<b>Teaching Assistant</b> , Yale University	2017-2021
PHYS 181: <i>University Physics</i>	Spring 2018, Spring 2020, Spring 2021
PHYS 180: <i>University Physics</i>	Fall 2017, Fall 2019, Summer 2020, Fall 2020
PHYS 166L: <i>General Physics Laboratory</i>	Spring 2017
<b>Teaching Assistant</b> , Middle East Technical University	2014-2016
PHYS 502: <i>Analytical Mechanics</i>	Fall 2015, Spring 2016
PHYS 408: <i>Particle Physics II</i>	Spring 2015, Spring 2016
PHYS 407: <i>Particle Physics I</i>	Fall 2014, Fall 2015
PHYS 311: <i>Classical Mechanics</i>	Fall 2014, Spring 2015, Fall 2015, Spring 2016
PHYS 105 - LAB: <i>General Physics I</i>	Fall 2014
<b>Intern</b> , PROMOD R&D Software, Ankara	Jul & Aug 2013
<i>worked for object tracking and camera calibration problems</i>	
<b>Intern</b> , SÖKTAŞ Textile, Aydın	Aug & Sep 2012
<i>worked in the control department</i>	

## OTHER ACTIVITIES

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Referee, *Journal of High Energy Physics*

Member, *University Forum (UVA)*

Organizer, *ATITPhysics Online School Series*

Advising Committee, *Joint Seminar Series in Theoretical Physics (Boun&METU&UTAA)*

Physics Outreach (in Turkish), *Evrin Ağacı*

## REFERENCES

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Available upon request