

Dr. Can Kozçaz

RESEARCH INTERESTS	Topological string theory, supersymmetric gauge theories, conformal field theories, mathematical physics, non-perturbative physics, resurgence, AdS/CFT correspondence, thermal quark-gluon plasma
EDUCATION	Ph.D. in Physics, 2009 , University of Washington, Seattle, WA, USA <ul style="list-style-type: none">Dissertation: “<i>The Refined Topological Vertex and its Applications in Physics and Mathematics</i>”Advisor: Prof. Amer Iqbal B.Sc. in Physics (with High Honors), 2003 , Bilkent University, Ankara, Turkey
EMPLOYMENT	Assistant Professor, Department of Physics 2017 - present Boğaziçi University, Istanbul, Turkey Postdoctoral Fellow, CMSA 2014 - 2017 Harvard University, Cambridge, MA, USA Postdoctoral Fellow, Theoretical Particle Physics 2012 - 2014 International School for Advanced Studies, SISSA, Trieste, Italy Postdoctoral Fellow & COFUND Marie Curie Fellow, Theory Division 2009 - 2012 CERN, Geneva, Switzerland
GRANTS	“Applications of Ding-Iohara-Miki Algebra in Supersymmetric Quantum Field Theories”, joint with RFBR (Russia) and TÜBİTAK 2021-present “BPS counting from instanton counting”, TÜBİTAK 2021-present Reintegration Grant, TÜBİTAK 2018-2020
HONORS AND AWARDS	Mustafa Parlar Encouragement Award , Prof. Dr. Mustafa Parlar Eğitim Araştırma Vakfı 2018 BAGEP Young Scientist Award , Bilim Akademisi 2018 The Miller Award , Department of Physics, University of Washington 2007
COURSES TAUGHT	PHYS 58D Special Topics: Algebraic Approaches in Gauge Theory (1 semester) Boğaziçi University, Department of Physics PHYS 68A Special Topics: Introduction to String Theory (1 semester) Boğaziçi University, Department of Physics PHYS 68B Special Topics: Topics in Gauge Theory (1 semester) Boğaziçi University, Department of Physics PHYS 501 Classical Dynamics (3 semesters) Boğaziçi University, Department of Physics PHYS 491/492 Introduction to Research in Physics I/II(6 semesters) Boğaziçi University, Department of Physics PHYS 302 Classical Mechanics II (3 semesters) Boğaziçi University, Department of Physics PHYS 380 Introduction to Electromagnetic Radiation (3 semester) Boğaziçi University, Department of Physics PHYS 201 Physics III (Electromagnetism) (5 semesters)

Boğaziçi University, Department of Physics

PHYS 197 Analytical Methods in Physics (1 semester1)

Boğaziçi University, Department of Physics

MATH 21b Linear Algebra and Differential Equations (1 semester)

Harvard University, Department of Mathematics

MATH 21a Multivariable Calculus (3 semesters)

Harvard University, Department of Mathematics

SEMINARS &
INVITED TALKS

1. *Supersymmetric Wilson Loops and Deformed W-Algebras*, IX Workshop On Geometric Correspondences of Gauge Theories, SISSA, Trieste (Italy) 2019
2. *Supersymmetric Wilson Loops and Deformed W-Algebras*, Functions And systems of Mathematical Physics Conference, Khazar University, Baku (Azerbaijan) 2019
3. *Understanding Gauge Theories from String Theory*, EMU PHYSICS DAYS2, Famagusta (North Cyprus) 2019
4. *Refined Topological Brane*, Gauge Theories and Differential Invariants, ICTP, Trieste (Italy) 2019
5. *Gauge/Liouville Triality for ABCDEFG*, YEFAK, İstanbul University, Istanbul, (Turkey) 2019
6. *Why String Theory?*, 34th Turkish Physical Society International Physical Congress, Muğla, (Turkey) 2018
7. *Refined Topological Brane*, Centre for Quantum Geometry of Moduli Spaces, Aarhus, (Denmark) 2018
8. *Refined Topological Brane*, Geometric correspondences of gauge theories, Erwin Schrödinger International Institute for Mathematics and Physics, Wien (Austria) 2018
9. *Refined Topological Brane*, VIII Workshop On Geometric Correspondences of Gauge Theories, SISSA, Trieste (Italy) 2018
10. *Gauge/Liouville Triality for ABCDEFG*, Koç University, Department of Physics, Istanbul, (Turkey) 2018
11. *Refined Topological Vertex and Its Different Applications*, Department of Mathematics, Boğaziçi University, Istanbul (Turkey) 2018
12. *Ayar/Liouville Üçlemesi: ABCDEFG*, Mimar Sinan Üniversitesi, Fizik Bölümü, İstanbul, (Türkiye) 2017
13. *Cheshire Cat Resurgence and Self-Resurgence*, Uppsala University, Department of Physics, Uppsala (Sweden), 2017.
14. *Elliptic Virasoro Conformal Blocks*, Strings 2016, Tsinghua University, Beijing (China), 2016.
15. *Elliptic Virasoro Conformal Blocks*, Brown University, Department of Physics, Providence (USA), 2016.
16. *Elliptic Virasoro Conformal Blocks*, University of New Hampshire, Department of Physics, Durham (USA), 2015.
17. *Elliptic Deformation of the Resolved Conifold*, V Workshop on Geometric Correspondences of Gauge Theories, SISSA, Trieste (Italy), 2015.
18. *M-Strings and Their Orbifold*, The University of Tokyo, Department of Physics, Tokyo (Japan), 2013.
19. *M-Strings and Their Orbifold*, Korea Institute for Advanced Study, School of Physics, Seoul (South Korea), 2013.
20. *M-Strings*, Moduli Spaces, Extremality and Global Invariants, CRM, Montreal (Canada), 2013.

21. *Suspended M2 Branes*, Center of Theoretical Physics, University of California, Berkeley (USA), 2013.
22. $\mathcal{N} = 2^*$ *Superconformal Indices from Topological String Theory*, String Theory Seminar, CERN, Geneva (Switzerland), 2013.
23. *Extending the Refined Topological Vertex and its Connection to the Refined Chern-Simons Theory*, Harvard University, Department of Mathematics, Boston (USA), 2013.
24. *Mirror of the Refined Topological Vertex*, Queen Mary University of London, Department of Physics, London (United Kingdom), 2012.
25. *Mirror of the Refined Topological Vertex*, New Perspectives on Supersymmetric Gauge Theories, Ludwig Maximilians Universität, Munich (Germany), 2012.
26. *Completing the Refined Topological Vertex*, String Theory Seminar, CERN, Geneva (Switzerland), 2011.
27. *A Matrix Model for the Refined Topological Vertex*, Workshop on Geometric Correspondences of Gauge Theories, SISSA, Trieste (Italy), 2011.
28. *Remodeling the Refined Topological Vertex*, Strings, Branes and Supergravity, Koç University and Istanbul Center for Mathematical Sciences, Istanbul (Turkey), 2011.
29. *A Matrix Model for the Refined Topological Vertex*, Weizmann Institute of Science, Rehovot (Israel), 2011.
30. *A-B-C Approaches to Surface Operators*, 6th Crete Regional Meeting on String Theory, Milos (Greece), 2011.
31. *The Refined Topological Vertex*, Boğaziçi University, İstanbul (Turkey), 2010.
32. *A-B-C Approaches to Surface Operators*, From Sigma Models to Four-dimensional QFT, DESY, Hamburg (Germany), 2010.
33. *S-duality and 2d Topological QFT*, Journal Club Talk, CERN, Geneva (Switzerland), 2010.
34. *A-model Checks for Surface Operators in $\mathcal{N} = 2$ Gauge Theories*, Middle Eastern Technical University, Ankara (Turkey), 2010.
35. *The Refined Topological Vertex and Crystals*, Middle Eastern Technical University, Ankara (Turkey), 2009.
36. *The Refined Topological Vertex*, String Theory Seminar, CERN, Geneva (Switzerland), 2009.

INVITED LECTURES

1. *The Refined Topological Vertex*, DESY, Hamburg (Germany), 2019.
2. *Refined Topological Vertex and Its Different Applications*, Centre for Quantum Geometry of Moduli Spaces, Aarhus (Denmark) 2018
3. *The Refined Topological Vertex and the M-strings*, Yukawa Institute for Theoretical Physics, Kyoto (Japan), 2013.
4. *Lectures on the Refined Vertex and Recent Developments*, Korea Institute for Advanced Study, School of Physics, Seoul (South Korea), 2013.
5. *Supersymmetric Gauge Theories in Different Dimensions*, Second IPM School and Workshop on Applied AdS/CFT, Isfahan (Iran), 2012.
6. *Surface Operators from Topological String Theory*, IPM School and Workshop on Applied AdS/CFT, Isfahan (Iran), 2011.
7. *Introduction to Quantum Field Theory*, International School of Theory & Analysis in Particle Physics, Doğus University, İstanbul (Turkey), 2011.

1. “*4d higgsed network calculus and elliptic DIM algebra*”, M. Ghoneim, C. Kozçaz, K. Kurşun, Y. Zenkevich, [arXiv:2012.15352](#) [hep-th] **Nucl.Phys.B** **978** (2022) **115740**
2. “*Supersymmetric Wilson Loops, Instantons, and Deformed W -Algebras*”, N. Haouzi, C. Kozçaz, [arXiv:1907.03838](#) [hep-th] **Commun.Math.Phys.** **393** (2022) **2**, **669-779**
3. “*Refined Topological Branes*”, C. Kozçaz, S. Shakirov, C. Vafa, W. Yan, [arXiv:1805.00993](#) [hep-th] **Commun.Math.Phys.** **385**, pages **937–961** (2021)
4. “*Argyres-Douglas Theories, Modularity of Minimal Models and Refined Chern-Simons*”, C. Kozçaz, S. Shakirov, W. Yan [arXiv:1801.08316](#) [hep-th] **accepted for publication in Advances in Theoretical and Mathematical Physics**
5. “*The ABCDEFG of Little Strings*”, N. Haouzi, C. Kozçaz, [arXiv:1711.11065](#) [hep-th] **JHEP** **06** (2021) **092**
6. “*Cheshire Cat resurgence, Self-resurgence and Quasi-Exact Solvable Systems*”, C. Koz ccaz, T. Sulejmanpasic, Y. Tanizaki, M. Ünsal **Commun.Math.Phys.** **364** (2018) **3**, **835-878** [arXiv:1511.00458](#) [hep-th]
7. “*Elliptic Virasoro Conformal Blocks*”, A. Iqbal, C. Kozçaz, S-T. Yau, [arXiv:1511.00458](#) [hep-th]
8. “*On orbifolds of M -Strings*”, B. Haghighat, C. Kozçaz, G. Lockhart, C. Vafa, [arXiv:1310.1185](#) [hep-th] **Phys.Rev.** **D89** (2014) **4**, **046003**
9. “*Gauge/Liouville Triality*”, M. Aganagic, N. Haouzi, C. Kozçaz, S. Shakirov, [arXiv:1309.1687](#) [hep-th] **to appear in Commun.Math.Phys.**
10. “ *M -Strings*”, B. Haghighat, A. Iqbal, C. Kozçaz, G. Lockhart, C. Vafa, [arXiv:1305.6322](#) [hep-th] **Commun.Math.Phys.** **334** (2015) **2**, **779-842** (also appeared on the TV series “*The Big Bang Theory*”, Season 7, Episode 20)
11. “*Refined Topological Strings and Toric Calabi-Yau Threefolds*”, A. Iqbal, C. Kozçaz, **JHEP** **03** (2017) **069** [arXiv:1210.3016](#) [hep-th]
12. “*Refined Hopf Link Revisited*”, A. Iqbal, C. Kozçaz, **JHEP** **1204** (2012) **046**
13. “*Mirror of the refined topological vertex from a matrix model*”, B. Eynard, C. Kozçaz, [arXiv:1107.5181](#) [hep-th]
14. “*Affine $sl(N)$ conformal blocks from $N=2$ $SU(N)$ gauge theories*”, C. Kozçaz, S. Pasquetti, F. Passerini, N. Wyllard, **JHEP** **1101:045,2011**
15. “ *A & B model approaches to surface operators and Toda theories*”, C. Kozçaz, S. Pasquetti, N. Wyllard, **JHEP** **1008:042,2010**
16. “*Cylindric Partitions and Branes*”, A. Iqbal, C. Kozçaz, T. Sohail, **Nucl.Phys.B****844:334-347,2011**
17. “*Refined Topological Vertex, Cylindric Partitions and the $U(1)$ Adjoint Theory*”, A. Iqbal, C. Kozçaz, K. Shabbir, **Nucl.Phys.B****838:422-457,2010**
18. “*Link Homologies and the Refined Topolpgical Vertex*”, S. Gukov, A. Iqbal, C. Kozçaz, C. Vafa, **Commun.Math.Phys.****298:757-785,2010**
19. “*The Refined Topological Vertex*”, A. Iqbal, C. Kozçaz, C. Vafa, **JHEP** **0910:069,2009**
20. “*Energy loss of a heavy quark moving through $\mathcal{N} = 4$ supersymmetric Yang-Mills plasma*”, C. P. Herzog, A. Karch, P. Kovtun, C. Kozcaz, L. G. Yaffe, **JHEP** **0607:013,2006**

PUBLIC TALKS

1. *CERN ve LHC*, (in Turkish), Bilgi University, İstanbul (Turkey), 2011
2. *CERN ve LHC*, (in Turkish), Yıldız University, İstanbul (Turkey), 2011
3. *CERN ve LHC*, (in Turkish), Marmara University, İstanbul (Turkey), 2011
4. *CERN ve LHC*, (in Turkish), Üsküdar American High School, İstanbul (Turkey), 2011
5. *CERN ve LHC*, (in Turkish), İstanbul Erkek Lisesi, İstanbul (Turkey), 2009

POPULAR SCIENCE
PUBLICATIONS

1. “*Sicim teorisi ve paralel evrenler*”, **Bilim ve Ütopya, Mayıs 2020**
2. “*Özel Görelelik Teorisi*”, **Bilim ve Ütopya, March 2019**
3. “*Sicim Teorisi*”, **Bilim ve Ütopya, December 2018**
4. “*Karanlık Madde*” (Dark Matter), C. Kozçaz, G. Ünel, **Bilim ve Teknik, June 2013**
5. “*Higgs Bosonunu Tekrar Bulmak*” (Re-discovering the Higgs Boson), C. Kozçaz, **Bilim ve Teknik, April 2013**
6. “*Parçacık Hızlandırıcıları*” (Particle Accelerators), C. Kozçaz, Ö. Mete, G. Ünel, **Bilim ve Teknik, January 2013**
7. “*Yeni bir parçacık bulmak*” (Discovering a New Particle), C. Kozçaz, Ö. Mete, G. Ünel, **Bilim ve Teknik, August 2012**