

# Ümit Işlak

Boğaziçi University,  
Department of Mathematics  
Bebek, Istanbul,  
Turkey

☎ 0551 5994117

✉ [umit.islak1@boun.edu.tr](mailto:umit.islak1@boun.edu.tr)

🌐 <https://sites.google.com/site/umitislak/home>

## Appointments

- Current **Associate Professor**, *Boğaziçi University*, Istanbul, Turkey.
- 2015-2016 **Jack Hale Postdoctoral Fellow**, *Georgia Institute of Technology*, Atlanta, GA.
- 2014-2015 **Dunham Jackson Assistant Professor**, *University of Minnesota*, Minneapolis, MN.
- 2014 **Research Associate**, *Paris VI, Laboratoire de Probabilités et Modeles Aleatoires*, Paris..
- 2010-2014 **Teaching and Research Assistant**, *University of Southern California*, Los Angeles, CA.
- 2007-2010 **Teaching Assistant**, *Boğaziçi University*, Istanbul, Turkey.

## Education

- 2014 **Ph.D. in Applied Mathematics**, *University of Southern California*, Los Angeles, CA, USA.  
Advisor : Jason Fulman  
Dissertation Title : Concentration inequalities with bounded couplings
- 2013 **M.Sc. in Statistics**, *University of Southern California*, Los Angeles, CA, USA.
- 2010 **M.Sc. in Mathematics**, *Boğaziçi University*, Istanbul, Turkey.
- 2007 **B.Sc. in Mathematics**, *Boğaziçi University*, Istanbul, Turkey.

## Research Interests

Probability theory and related fields.

## Publications

- (with Ella Hiesmayr), *Asymptotic results on Hoppe trees and their variations*. *Journal of Applied Probability* 57.2: 441-457, 2020.
- (with Alperen Yaşar Özdemir), *On an alternative sequence comparison statistic of Steele*. *Discrete Mathematics & Theoretical Computer Science* 22, 2020.
- (with Jay Bartroff and Larry Goldstein) *Bounded size biased couplings for log concave distributions and concentration of measure for occupancy models*, *Bernoulli*, 24(4B), 3283-3317, 2018.
- (with İlker Arslan and Cihan Pehlivan), *On unfair permutations*, *Statistics and Probability Letters*, 2018.
- (with Alperen Yaşar Özdemir), *Asymptotic results on weakly increasing subsequences in random words*. *Discrete Applied Mathematics* 251,171-189, 2018.
- Descent-Inversion statistics in riffle shuffles*, *Turkish Journal of Mathematics* 42.2: 502-514, 2018.
- Asymptotic results for random sums of dependent random variables*, *Statistics and Probability Letters*, 2017.

(with Serdar Altok) *On leaf related statistics in recursive tree models*, Statistics & Probability Letters 121, 61-69, 2016.

Concentration inequalities with bounded couplings, PhD Dissertation, 125 pages, 2014.  
<http://digitallibrary.usc.edu/cdm/ref/collection/p15799coll3/id/420563>.

(with Larry Goldstein) *Concentration inequalities via zero-biased couplings*, Statistics and Probability Letters, vol 86, pp. 17-23, <http://arxiv.org/abs/1304.5001>, 2014.

## Preprints

(with Yunus E. Demirci and Alperen Y. Ozdemir), *Edge and vertex flippings in regular and bipartite graphs*, arXiv:2201.03315, 20 pages, 2022.

(with Christian Houdré) *A central limit theorem for the length of the longest common subsequence in random words*, <http://arxiv.org/abs/1408.1559>, 34 pages, last update: 2022.

(with Yunus E. Demirci and Mehmet A. Yıldız) *On a cover time problem on a dynamic graph with steps at random times.*, arXiv:2110.01083, 15 pages, 2021.

(with Altar Çiçeksiz and Yunus E. Demirci) *The Variance and the Asymptotic Distribution of the Length of Longest  $k$ -alternating Subsequences.* arXiv:2107.12459, 13 pages, 2021.

(with Oğuz Güreker and Mehmet A. Yıldız), *A study on random permutation graphs*, preprint, arXiv:1901.06678, 2021.

(with Ella Hiesmayr), *Some remarks on biased recursive trees*, preprint, arXiv:1801.04617, 2018.

(with Ruoting Gong, and Christian Houdré) "A central limit theorem for the optimal alignments score in multiple random words." arXiv:1512.05699, 2016.

(with Subhankar Ghosh) *Multivariate concentration inequalities with size biased couplings*, 11 pages, <http://arxiv.org/abs/1310.5448>, 2013 (not considered for publication anymore since the main result was proven independently by Arratia and Baxendale in arXiv:1306.0157 in the same year).

## Projects

(TÜBİTAK 1001. Researcher), *Özel Çizgelerin Rastgele Üretilmesi*, Principal investigator: Tınaz Ekim, 2022-.

(BAP 16483), *(Outliers, order statistics, and concentration inequalities)*, 2020-.

(BİDEB 2232), *Stein's method and subsequence problems*, 2017-2019.

## Books

2022 *Ayrı Matematikte Seçme Konular I*, 328 pages, Nesin Yayınevi, 2022.

2022 *Temel Olasılık Teorisi ve Matematiksel İstatistik I*, 384 pages, to appear by Nesin Yayınevi.

2021 (with Arda Akdemir) *Markov Zincirlerine Kısa Bir Giriş*, 120 pages, will not be published, available through Researchgate.

## Translation

2022 (with Fatih Demirkale and Oktay Ölmez) Robin J. Wilson, *Introduction to Graph Theory*, English to Turkish, completed, Palme Yayınevi.

## Teaching Experience

**Boğaziçi University**, *Instructor*, Mathematics Department  
Math 234 - *Advanced Calculus II*

Math 231 - *Advanced Calculus I*  
 Math 532 - *Real Analysis II*  
 Math 531 - *Real Analysis I*  
 Math 544 - *Stochastic processes and martingales*  
 Math 541 - *Probability Theory*  
 Math 585 - *Sel. Top. in Probability and Statistics: Statistical learning theory*  
 Math 345 - *Probability*  
 Math 132 - *Calculus of a single variable*  
 Math 131 - *Calculus of a single variable*  
 Math 162 - *Discrete Mathematics*  
 Math 201 - *Matrix Algebra*  
 Math 344 - *Introduction to Probability and Statistics*  
 Math 361 - *Combinatorics*  
 Math 48X - *Introduction to probabilistic number theory*  
 Math 101 - *Calculus I*  
 Math 102 - *Calculus II*  
 Math 331 - *Metric spaces*

**Georgia Institute of Technology, Instructor, Mathematics Department**

Math 1551 - *Differential Calculus*, Fall 2015, Spring 2016

**University of Minnesota, Instructor, Mathematics Department**

Math 5651 - *Basic Theory of Probability and Statistics*, Fall 2014, Spring 2015

**University of Southern California, Teaching Assistant, Mathematics Department**

Math 445 - *Advanced Engineering Mathematics II*, Spring 2013

Math 308 - *Statistical Inference and Data Analysis II*, Fall 2013

Math 218 - *Statistics for Business Students*, Spring 2012

Math 118 - *Calculus for Business Students*, Fall 2012

## Graduate Students

- 2022 (joint with Mustafa Baydoğan) Can Hakan Dağdır, *Covariance estimation of spatio-temporal random variables with Kronecker product based models*, BU Math, Master's thesis.
- 2022 Elif Yılmaz, *Short-term forecast methodologies and case studies in traffic flow*, BU CS, Master's thesis.
- 2021 Yunus Emre Demirci, *Stationary distributions and convergence rates in edge flipping problems*, BU Math, Master's Thesis.
- 2020 Mehmet Akif Yıldız, *On online and approximate cover times*, BU Math, Master's Thesis.
- 2018 Abdurrahman Demirelli, *First moment problem in longest common subsequences*, BU Math, Master's Thesis.
- 2018 Ella Hiesmayr, *On asymptotics of two non-uniform recursive tree models*, BU Math, Master's Thesis.
- current (joint with Atabey Kaygun) Hakan Erçe and Erkin Şimşek.