

# Dr. Benjamin C. Walter

# Curriculum Vitae

Department of Mathematics  
University of the Virgin Islands  
Citizenship: USA

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## POSITIONS

- Associate Professor, University of the Virgin Islands 2023-continues
- Assistant Professor, Middle East Technical University, NCC 2009-2023
- Visiting Researcher, Max Planck Institute for Mathematics, Bonn Fall 2006
- Visiting Researcher, Institute Mittag-Leffler, Stockholm Spring 2006
- Research Assistant Professor, Purdue University 2005-2009

## EDUCATION

### Brown University:

- *Ph.D. in Mathematics*, advised by T. Goodwillie July 2005

### Rice University:

- *B.A.s magna cum laude in Mathematics and Statistics* May 1998

## RESEARCH INTERESTS

Algebraic topology. Operads and cooperads, Lie coalgebras, rational homotopy theory, calculus of functors, category theory, knot theory.

## PAPERS

(arXiv links)

- *Infinitesimal calculations in fundamental groups.* (with Gadish, Ozbek, Sinha) (arXiv:2403.20264)
- *Lie algebra configuration pairing.* (arXiv:1010.4732)
- *The left-greedy Lie algebra basis and star graphs.* (with Shiri) *Involve*, Vol 9 (2016). no 5, 783-795.
- *Cooperads as symmetric sequences.* *Morfismos*. Vol 17 (2013), no 2, 71-100.
- *Lie coalgebras and rational homotopy theory, II: Hopf invariants.* (with Sinha) *Trans. Amer. Math. Soc.* Vol 365 (2013), no 2, 861-883.
- *Lie coalgebras and rational homotopy theory, I: Graph coalgebras.* (with Sinha) *Homology, Homotopy and Applications*, Vol 13 (2011), no 2, 263-292.
- Published Reviews: 11 (AMS Mathematical Reviews, MathSciNet)

## TEACHING

\* postgraduate course; ‡ (re)developed by me

### University of the Virgin Islands

- Math 42, Intro to Algebra Concepts and Skills, Part 2 Fall 2023
- Math 140, College Algebra with Apps Fall 2023
- Math 143, Precalculus Algebra Fall 2023
- Math 153, College Trigonometry Spring 2024
- Math 242, Intro to Calculus and Analytic Geometry, Part 2 Spring 2024
- Math 235, Intro to Statistics with Applications Fall 2024

### Middle East Technical University, Northern Cyprus Campus

Precalculus, ‡Mathematics for Social Sciences, Calculus with Analytic Geometry, Calculus for Functions of Several Variables, ‡Applied Mathematics for Engineers, Differential Equations, Basic Linear Algebra, ‡Engineering Statistics, ‡Probability and Statistics for Civil Engineers

### Purdue University

Multivariable Calculus, Linear Algebra, Ordinary Differential Equations, An Introduction to Proof Through Analysis, Geometry, Elements of Algebra I, \*Linear Algebra with Applications, \*Elementary Topology

## RECENT TALKS AND PRESENTATIONS

- “Ethical Use of Artificial Intelligence” (ECS seminar)  
University of the Virgin Islands Sept. 2024
- “Infinitesimal Calculations in Fundamental Groups” (Conference talk)  
Algebraic Structures Topology, Puerto Rico: 2024 June 2024
- “How to Create a Research Poster” (Workshop for EPSCOR summer program)  
University of the Virgin Islands June 2024
- “Leveraging ChatGPT for Data Analysis and Visualization” (ECS seminar)  
University of the Virgin Islands Jan. 2024
- “Calculus in Groups” (Math seminar.)  
University of the Virgin Islands April 2023
- “A Brief Introduction to MATLAB” (Seminar for Society of Petroleum Eng.)  
Middle East Technical University, Northern Cyprus Campus Sept. 2019
- “Group and Lie Algebra Homology” (One week advanced graduate minicourse)  
Nesin Matematik Köyü, Sirince Turkey Sept. 2019
- “Homological Algebra” (One week advanced graduate minicourse)  
Nesin Matematik Köyü, Sirince Turkey Aug. 2019
- “Lie Algebras and Coalgebras via the Configuration Pairing” (Invited talk)  
Ecole Polytechnique Fédérale de Lausanne Topology Seminar June 2017
- “Lie Algebra Configuration Pairing” (Invited talk)  
American University of Sharjah Math Colloquium March 2017
- “Finite Type Knot Invariants” (One week graduate minicourse)  
Nesin Matematik Köyü, Sirince Turkey Summer 2016
- “Introduction to Category Theory” (One week graduate minicourse)  
Nesin Matematik Köyü, Sirince Turkey Summer 2015
- “Introduction to Homology and Homotopy” (Two week graduate minicourse)  
Nesin Matematik Köyü, Sirince Turkey Summer 2013

## ADVISING AND MENTORSHIP

- Postdoctoral Advisor. Dr. S. Kayacan 2019–2021
- Postdoctoral Advisor. Dr. R. Koudenburg 2015–2017
- Undergraduate Research Mentor. A. Shiri 2014–2015

## OTHER PROFESSIONAL ACTIVITIES

- Consultant. Nesin Matematik Köyü Çevrimiçi Eğitim Platformu 2015–2016  
Deployed and administered Moodle / WebWork server using Amazon  
Web Services (AWS) for online Turkish mathematics learning platform.

## SERVICE

### University of the Virgin Islands

- Middle States Accreditation working group: Standard III.
- CSM working groups: Website, Faculty Retention Strategic Plan.
- CSM committees: 2024 Computer Science Hiring.
- American association of university professors (AAUP): Treasurer.

### Middle East Technical University

- Mathematics Department Coordinator 2019–2020
- WeBWorK Problem Coder: METU-NCC WebWork library 2015–2023
- Mathematics Department WeBWorK Server Administrator 2010–2023
- Mathematics Department Webmaster 2009–2016

**Reviewer / Referee:** American Mathematical Society, Geometry and Topology,  
Pure and Applied Mathematics Quarterly, European Journal of Combinatorics