

# Robert Burklund

## Contact Information

Department of Mathematical Sciences  
University of Copenhagen

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## EDUCATION

**Massachusetts Institute of Technology**

Ph.D. Mathematics, May 2022

**Massachusetts Institute of Technology**

B.S. Mathematics, June 2017

## EMPLOYMENT

**University of Copenhagen**

NSF Postdoc, July 2022 –

## Publications

*On the  $K$ -theory of regular coconnective rings,*

with Ishan Levy.

Selecta Math. (N.S.). 29 (2023), no. 2

*Adams-type maps are not stable under composition.*

with Ishan Levy and Piotr Pstragowski.

Proc. Amer. Math. Soc. Ser. B, vol. 9 (2022), 373-376

*On the boundaries of highly connected, almost closed manifolds.*

with Jeremy Hahn and Andrew Senger.

To appear in Acta Math.

*An extension in the Adams spectral sequence in dimension 54 (2021).*

Bull. Lond. Math. Soc., vol. 53, 404–407.

*The trace of the local  $\mathbb{A}^1$ -degree (2021),*

with Thomas Brazelton, Stephen McKean, Michael Montoro and Morgan Opie.

Homology, Homotopy and Appl., vol. 23 No. 1, 243–255.

## Preprints

*Quivers and the Adams spectral sequence,*

with Piotr Pstragowski, arXiv:2305.08231.

*The Adams differentials on the classes  $h_j^3$ ,*

with Zhouli Xu, arXiv:2302.11869.

*The chromatic nullstellensatz,*

with Tomer Schlank and Allen Yuan, arXiv:2207.09929.

*Multiplicative structures on Moore spectra,*  
arXiv:2203.14787.

*How big are the stable homotopy groups of spheres?*,  
with an appendix joint with Andrew Senger, arXiv:2203.00670.

*Galois reconstruction of Artin–Tate  $\mathbb{R}$ -motivic spectra,*  
with Jeremy Hahn and Andrew Senger, arXiv:2010.10325.

*Inertia groups in the metastable range,*  
with Jeremy Hahn and Andrew Senger, arXiv:2010.09869.

*On the high-dimensional geography problem,*  
with Andrew Senger, arXiv:2007.05127.

### Invited Talks

- K-theory and the telescope conjecture,*
  - Transatlantic Transchromatic Homotopy Theory II. (August 2023)
  - A Panorama of Homotopy Theory. (June 2023)
- The Chromatic Nullstellensatz,*
  - Bergen topology seminar (February 2023)
  - Chromatic homotopy, K-theory and functors. (January 2023)
  - Copenhagen algebra/topology seminar. (September 2022)
  - Motivic Geometry Conference. (August 2022)
- Nilpotence and periodicity revisited,*
  - Topology intercity seminar, Utrecht–Nijmegen. (March 2023)
  - Muenster topology seminar. (November 2022)
  - Stockholm university topology seminar. (November 2022)
- The Balmer spectrum of cellular  $\mathbb{C}$ -motivic spectra,*
  - Spectral methods in equivariant mathematics. (October 2022)
- Multiplicative structures on Moore spectra,*
  - eCHT research seminar. (August 2022)
- Motivic stable stems over a field,*
  - Copenhagen algebra/topology seminar. (November 2021)
  - Chicagoland topology seminar. (October 2021)
  - UCLA topology seminar. (October 2021)
- How big are the stable homotopy groups of spheres?*,
  - Rochester topology seminar. (February 2021)
- Classification of manifolds and the Adams spectral sequence,*
  - Melbourne topology seminar. (April 2022)
  - MIT geometry and topology seminar. (October 2021)
  - UCSD topology seminar. (February 2021)

### Seminars organized

- Babytop: *Deforming homotopy theory and synthetic spectra* (Fall 2021)

Babytop: *Bloch–Kato* (Spring 2021)  
Babytop: *Deformation theory* (Spring 2020)

### Conferences and Workshops Attended

Transatlantic Transchromatic Homotopy Theory II,  
Regensburg, Germany. (August 2023)  
A Panorama of Homotopy Theory,  
Oxford, UK. (June 2023)  
Chromatic homotopy, K-theory and Functors,  
CIRM, Luminy, France. (January 2023)  
Workshop: Spectral methods in equivariant mathematics,  
Hausdorff center for mathematics, Bonn, Germany. (October 2022)  
Motivic Geometry Conference,  
University of Oslo, Oslo, Norway. (August 2022)  
Joint International Meeting of the AMS and the CMS,  
Fudan University, Shanghai, China. (June 2018)  
International Workshop on Algebraic Topology,  
Southern University of Science and Technology, Shenzhen, China. (June 2018)

### Service

co-Advisor for 2 PhD students, 2 current.  
Advisor for 4 Master's students, 2 current.  
MIT SPUR and UROP+: Mentored 8 undergraduate students on research projects (2017–2021).  
RSI and MIT PRIMES: Mentored 4 high school students on research projects (2017–2020).  
Referee work for Camb. J. Math., Compositio, Homology Homotopy Appl., Inventiones, Proc. AMS.

### Teaching Experience

Copenhagen  
Geometric Topology, Instructor (Block 3, '23-'24)  
Algebraic Topology, co-Instructor (Block 1, '23-'24)  
Fun with finite spectra, Instructor (Block 4, '22-'23)  
MIT  
18.821: Project lab, TA. (Fall 2021)  
18.100P: Real Analysis, Recitation leader. (Spring 2021)  
18.03: Differential equations, Recitation leader. (Fall 2020)  
18.03: Differential equations, Recitation leader. (Spring 2020)  
18.785: Number theory I, Grader. (Fall 2019)  
18.100P: Real Analysis, Grader. (Spring 2019)  
18.901: Topology, Grader. (Fall 2018)