

# Márton Beke

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## Education

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### Budapest University of Technology and Economics

Mathematician Phd

- Supervisor: András Stipsicz

Budapest, Hungary

Sep 2023 - ongoing

### Eötvös Loránd University

Mathematician Msc

- Outstanding (5) qualification
- 'Rational homology disk smoothings of isolated surface singularities', supervisor: András Stipsicz

Budapest, Hungary

Sep 2021 - Jun 2023

### Eötvös Loránd University

Mathematics Bsc

- Outstanding (5) qualification
- 'Morse-Theory and its applications' (in hungarian), supervisor: Tamás Terpai

Budapest, Hungary

Sep 2018 - Jun 2021

## Publications

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### JOURNAL ARTICLES

New Exotic four-manifolds with  $Z/2Z$  fundamental group

Márton Beke, László Koltai, Sarah Zampa

*arXiv preprint arXiv:2312.08452, submitted to Michigan Journal of Mathematics (2023). 2023*

### BOOK CHAPTER

A Knot-theoretic Tour of Dimension Four

Kyle Hayden Márton Beke

*Singularities and Low-dimensional Topology, 2023, Budapest, Hungary*

## Fellowships, awards and competitions

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### Smooth four-manifolds and their applications

Alfréd Rényi Institute of Mathematics

- Participant as investigator
- NKFI grant K146401

2024/27

### Rényi Doctoral Fellowship

Alfréd Rényi Institute of Mathematics

- One year fellowship for highly promising PhD students

2023/24

### OTDK first prize

Pannon University

- Supervisor: Balázs Gerencsér
- title: **Asymptotic spectral analysis of random modifications of cyclic graphs**
- Joint work with Márton Borbényi and Levente Szemerédi

Veszprém  
spring 2023

### Knots, links and complex singularities

Rényi Alfréd Institute of Mathematics

- Participant as investigator
- NKFI grant KKP126683

2018/23

### National Higher Education Scholarship

ELTE

- One year national scholarship for outstanding professional work

2022/23

### TDK first prize

ELTE Institute of Mathematics

- Supervisor: Balázs Gerencsér
- title: **Asymptotic spectral analysis of random modifications of cyclic graphs**
- Joint work with Márton Borbényi and Levente Szemerédi

Fall 2022

## Research competition "M" category first prize

MTA Lendület

January 2021

- Week long competition on Morse-theory

## Conferences and other visits

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### 1st Budapest-Cluj meeting in Singularities and Beyond

Babeş-Bolyai University of Cluj-Napoca

Cluj-Napoca, Romania

Oct 31 2023 - Nov 2 2023

- Conference for better cooperation between the singularity theory communities in Budapest and Cluj-Napoca
- Talk title: **Rational blow-downs and exotic 4-manifolds**
- <https://math.ubbcluj.ro/laszlo.tamas/budcjsing.html>

### Leaning into Topology Workshop

University of Pisa

Pisa, Italy

Sep 18 2023 - Sep 19 2023

- Two day workshop on Low-dimensional Topology
- <https://sites.google.com/sns.it/lit-workshop/>

### The Low-dimensional Workshop

Erdős Center

Budapest, Hungary

Mar 27 2023 - Mar 31 2023

- Research workshop on recent advances in low dimensional topology
- Part of the singularities and low dimensional topology special semester
- <https://erdoscenter.renyi.hu/events/low-dimensional-workshop>

### Winter school in singularities and low-dimensional topology

Erdős Center

Budapest, Hungary

Jan 20 2023 - Jan 27 2023

- Winter school with mini-courses on knot-theory, lattice cohomology deformation theory and Heegaard Floer homology
- Part of the singularities and low dimensional topology special semester
- <https://erdoscenter.renyi.hu/events/winter-school-singularities-and-low-dimensional-topology>

### 4-Manifolds: From Above and Below

CIRM

Luminy, France

Sep 12 2022 - Sep 16 2022

- Summer school with mini-courses on Knot Floer homology, surgery theory and symplectic 4-manifolds
- <https://conferences.cirm-math.fr/2593.html>

### Frontiers in Geometry and Topology Summer School

ICTP

Trieste, Italy

Aug 1 2022 - Aug 5 2022

- Summer school with mini-courses on Heegaard Floer homology and Lattices among other topics
- <https://indico.ictp.it/event/9705/>

## Work Experience

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### BME

teaching

2023-ongoing

- Mathematics G1&G2, lecturer: Jenő Szirmai
- As part of the Phd program

### REU

research

Jul 2022

- One month long research program organized by Lendület groups
- Topic: **Topology of normal surface singularities and combinatorics of their generic analytic structures**
- Supervisor: János Nagy, work joint with Miklós Eper and Ákos Körösi

### REU

research

Jul 2021 - Current

- One month long research program organized by Lendület groups, work ongoing
- Topic: **Speedup of random walks**
- Supervisor: Balázs Gerencsér, work joint with Márton Borbényi and Levente Szemerédi

### ELTE

teaching

Feb 2021 - Jun 2021

- Complex analysis problem session, lecturer: István Sigray

# Languages

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<b>English</b>	Advanced
<b>German</b>	Basic
<b>Hungarian</b>	Native
<b>Japanese</b>	Basic