Tamás László

Curriculum Vitae

Personal Data

Name: Tamás
Surname: László
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Education

2008–2013 **PhD in Mathematics**, *Central European University, Department of Mathematics and its Applications and MTA Rényi Institute of Mathematics*, Budapest, Hungary.
Title of the thesis: *Lattice cohomology and Seiberg–Witten invariants of normal surface singularities* (degree admission date: 20 December, 2013)
Adviser: Prof. András Némethi, MTA Rényi Institute of Mathematics, Budapest, Hungary

2006–2007 **MSc - Symplectic Geometry and beyond**, *University of Utrecht, Department of Mathematics*, Utrecht, The Netherlands.

2002–2006 **BSc in Mathematics**, *Babeş-Bolyai University, Faculty of Mathematics and Computer Science*, Cluj Napoca, Romania.

Employments

2020/03– **Assistant Professor**, Babeş–Bolyai University, Cluj-Napoca, Romania.

2018/10– **Senior research fellow**, Alfréd Rényi Institute of Mathematics, Budapest,
2020/02 Hungary.

10/2016– **Postdoctoral Researcher**, BCAM - Basque Center for Applied Mathe-
09/2018 matics, Bilbao, Bizkaia, Spain.

2013–09/2016 **Postdoctoral Young Researcher, Hung. Acad. Sci. fellow**, Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences, Budapest, Hungary.

2015–2016 **Teaching Associate**, Budapest Business School, Budapest, Hungary.

2014–2016 **Teaching Associate**, Budapest University of Technology and Economics, Department of Analysis, Budapest, Hungary.

2011–2013 **Young Researcher, Hung. Acad. Sci. fellow**, Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences, Budapest, Hungary.

2008–2009	**Teaching Associate**, Budapest University of Technology and Economics, Department of Geometry, Budapest, Hungary.
2007–2008	**Early stage researcher**, Budapest University of Technology and Economics, Department of Geometry, Budapest, Hungary.

Scholarships and Grants

2012	Award for Advanced Doctoral Student, Central European University, Budapest, Hungary
2009	Academic Pro-Rector's Excellence Award, Central European University, Budapest, Hungary
2008–2011	PhD Scholarship, Central European University, Budapest, Hungary
2006–2007	Mathematical Research Institute (MRI) Master Class Scholarship, Utrecht, The Netherlands
2005–2006	Socrates-Erasmus scholarship, Department of Geometry, University of Szeged, Hungary (5 months)
2004–2005	Ceepus scholarship, Eötvös Lóránd University, Budapest, Hungary (4 months)
2002–2006	Emeritus scholarship, Babeș–Bolyai University, Cluj Napoca, Romania

Languages

Hungarian	**Mothertongue**
Romanian	**Advanced**
English	**Advanced**
Spanish	**Intermediate**

Research interests

Geometry and topology of complex curve and normal surface singularities: Artin-Laufer program, lattice cohomology and its interactions with Heegaard-Floer and Seiberg-Witten theories, Poincaré series and its applications

Algebraic and topological aspects of deformations of singularities

Interactions between algebraic geometry, topology, combinatorics and other fields of mathematics

Persistence homology and topological data analysis

Publications and preprints

1. J.I. Cogolludo-Agustín, T. László, J. Martín-Morales, A. Némethi, *Delta invariant of curves on rational surfaces I. The analytic approach*, arXiv:1911.07539 [math.AG] (2019)

2. T. László, A. Némethi, *On the geometry of strongly flat semigroups and their generalizations*, in *Proceedings of the conference "A Panorama of Singular Varieties (celebration of Prof. Lê Dũng Tráng's 70th birthday)"* **AMS Contemp. Math.** (2020), DOI: https://doi.org/10.1090/conm/742/14941

3. T. László, J. Nagy, A. Némethi, *Combinatorial duality for Poincaré series, polytopes and invariants of plumbed 3-manifolds*, **Selecta Math. New Ser.** (2019) 25: 21, DOI: https://doi.org/10.1007/s00029-019-0468-9

4. T. László, J. Nagy, A. Némethi, *Surgery formulae for the Seiberg-Witten invariant of plumbed 3-manifolds*, **Rev. Mat. Complut.** (2019), DOI: 10.1007/s13163-019-00297-z

5. T. László, Zs. Szilágyi, *On Poincaré series associated with links of normal surface singularities*, **Trans.of AMS** (2019), DOI: https://doi.org/10.1090/tran/7802

6. T. László, Zs. Szilágyi, *Némethi's division algorithm for zeta-functions of plumbed 3-manifolds*, **Bull. London Math. Soc.** 50 (2018), 1035–1055

7. T. László, Zs. Szilágyi, *Non-normal affine monoids, modules and Poincaré series of plumbed 3-manifolds*, **Acta Math. Hungar.**, 152 (2) (2017), 421–452, DOI: 10.1007/s10474-017-0726-2

8. T. László, A. Némethi, *Reduction theorem for lattice cohomology*, **Int Math Res Notices**, 11 (2015) 2938–2985, https://doi.org/10.1093/imrn/rnu015

9. T. László, A. Némethi, *Ehrhart theory of polytopes and Seiberg-Witten invariants of plumbed 3-manifolds*, **Geometry & Topology**, 18 (2014) 717–778, DOI: 10.2140/gt.2014.18.717

10. T. László, *Lattice cohomology and Seiberg–Witten invariants of normal surface singularities*, PhD thesis, www.etd.ceu.hu/2014/laszlo_tamas.pdf, 2013

Manuscript in preparation

1. J.I. Cogolludo-Agustín, T. László, J. Martín-Morales, A. Némethi, *Delta invariant of curves on rational surfaces II. Poincaré series and topological aspects*, manuscript in preparation (2020)

2. T. László, *On a polynomial invariant of elliptic singularities*, manuscript in preparation (2020)

3. J. Fernández de Bobadilla, T. László, A. Némethi, B. Sigurðsson, *On $(-K^2)$-building blocks for double suspension surface singularities*, manuscript in preparation (2020)

Research projects

2018– *Member* - NKFIH Grant "Élvonal (Frontier)" KKP 126683 - National Science Fundation of Hungary (PI: Prof. A. Stipsicz)

2016–2018 *Member* - ERC CoG "New methods and interacions in Singularity Theory and beyond" - FP7-IDEAS-ERC (PI: Prof. J. Fernández de Bobadilla)

2012–2015 *Member* - Research grant "Surface singularities and contact topology" OTKA no.100796 - National Science Fundation of Hungary (PI: Prof. A. Némethi)

Talks

2019 *'Delta invariant formulae of curves on rational surface singularities I., II.'*, Alg. Geom.& Diff. Top. Seminar, Rényi Inst. of Math., Budapest

'On delta invariants of curves on rational surface singularities', Workshop on Singularities: topology, valuations and semigroups, Madrid, May 29-31, 2019

2018　*'Strongly flat semigroups and their geometry'*, Alg. Geom.& Diff. Top. Seminar, MTA Rényi Inst. of Math., Budapest

2017　*'On (topological) Poincaré series'*, Workshop on Theory of valuations, Paris, December 4-6, 2017

2017　*'Némethi's division algorithm for zeta-functions of links of normal surface singularities'*, 4° Congreso de Jóvenes Investigadores, Real Sociedad Matemática Española, Valencia, September 4-8, 2017

　　　'On zeta-functions of links of normal surface singularities', Geometric aspects of singularities, Lille, May 29-31, 2017

2016　Doctoral course '*Topological studies with a view towards Artin-Laufer program of normal surface singularities*' given at the Universidad Complutense de Madrid, Department of Algebra, Madrid

　　　'Non-normal affine monoids and surface singularities', Algebraic Geometry and Differential Topology Seminar, MTA Rényi Inst. of Math., Budapest

2014　*'Topological Poincaré series of normal surface singularities and Ehrhart theory of polytopes'* at the '13th International Workshop on Real and Complex Singularities', USP, Sao Carlos, Brasil

2013　*'Poincaré series, Ehrhart theory and Seiberg–Witten invariants associated with negative definite plumbed 3-manifolds'* at the conference on 'Geometry and topology of smooth 4–manifolds', Max Planck Institute for Mathematics, Bonn, Germany

2012–2015　Several talks on the 'Singularity Theory and Low Dimensional Topology Seminar' at the MTA Rényi Inst. of Math., Budapest

Other activities

Organizations

2019　Organization of the international conference *'Némethi60: Geometry and Topology of Singularities'*, Budapest, May 27-31, 2019

Editorial activities

2020　Coeditor of the conference volume *'Singularities and their Interaction with Geometry and Low Dimensional Topology - In Honor of András Némethi'*, **Birkhäuser - Trends in Mathematics**, with J. Fernández de Bobadilla și A. Stipsicz

February 3, 2020　　　　　　　　　　　　　　　　　　　　　　　　László Tamás
Cluj-Napoca