Curriculum Vitae

Prof. Dr. Tomáš BZDUŠEK

(version Mar 2024)

Personal Information

Home Address: Feldblumenstrasse 74
8134 Adliswil, Switzerland

Website: https://www.tomasbzdusek.com/

Office Address: Physics Institute, University of Zürich
Y36 K-32, Winterthurerstrasse 190
8057 Zürich, Switzerland

Tel. Office: +41 44 635 5723
E-mail: tomas.bzdusek@uzh.ch

Born: 1989 in Piešťany, Slovakia
Marital status: married, two children

Google Scholar: https://goo.gl/8H5Xat
ResearchGate: https://goo.gl/Dvqmiq
ORCID: 0000-0001-6904-5264
ResearcherID U-4786-2018

Education

09/2013 – 07/2017 Institute for Theoretical Physics, **ETH Zürich**, Switzerland
PhD degree in *Physics* Graduated: 19 Jan 2018
Thesis advisor: Prof. Manfred Sigrist

09/2010 – 06/2013 **Comenius University** in Bratislava, Slovakia
Master's degree in *Theoretical Physics* Graduated: 16 Jul 2013
Thesis advisor: Prof. Richard Hlubina
Final exams in *mathematical physics* and *many-body physics*.

09/2007 – 07/2010 **Comenius University** in Bratislava, Slovakia
Bachelor's degree in *Physics* Graduated: 26 Oct 2010
Thesis advisor: Prof. Richard Hlubina

09/1999 – 06/2007 **Gymnázium Pierra de Coubertina** in Piešťany, Slovakia
Matura Graduated: June 2007
Final exams in *Mathematics*, *Physics*, *Chemistry*, *Slovak language and literature*, *English*

Employment history

09/2023 – SNSF Professor at **University of Zürich**, Switzerland,
Running a *Theory of Topological Matter* group, funded by SNSF Starting Grant.

10/2019 – 08/2023 Ambizione fellowship at the **Paul Scherrer Institute**, Switzerland,
with **Prof. Chrstiopher Mudry**, in the *Division of Scientific Computing, Theory and Data*.
Simultaneously, associated senior scientist at the **University of Zürich** in the group of **Prof. Titus Neupert**. Member of NCCR MARVEL between 2020 – 2022.

09/2017 – 09/2019 Gordon and Betty Moore Fellowship at **Stanford University**, USA,
in the group of **Prof. Steven A. Kivelson** at *Geballe Laboratory for Advanced Materials*.
Collaborations with the groups of **Prof. Shoucheng Zhang** and **Prof. Shanhui Fan**.

09/2013 – 01/2017 Teaching assistant at **ETH Zürich**, Switzerland
in the group **Prof. Manfred Sigrist** at the *Institute for Theoretical Physics*.
Supervised initially by **Dr. A. Rüegg** and later by **Dr. A. Soluyanov**.

Teaching activities

Teaching assistant

Course "*Superconductivity*" by Prof. M. Sigrist (HS 2016)
Course "*Solid State Theory*" by Prof. M. Sigrist (FS 2016)
Course "*Statistical Physics*" by Prof. M. Sigrist (HS 2015)
Course "*Mechanics of Continua*" by Prof. M. Sigrist (FS 2015)
Course "*Phase Transitions and Critical Phenomena*" by Prof. V. Geshkenbein (HS 2014)
Course "*Solid State Theory*" by Prof. M. Sigrist (FS 2014)
Course "*Unconventional Superconductivity*" by Prof. V. Geshkenbein (HS 2013)

Students supervision

Zoltán Guba PhD student at University of Zürich (2023 –)
Preliminary thesis topic: "*Characterization of delicate topological phases.*"

Patrick M. Lenggenhager PhD student at PSI Villigen & ETH Zürich (2019 – 2023)
thesis: "*Emerging avenues in band theory: multigap topology and hyperbolic lattices.*"

Aleksandra Nelson PhD student of Prof. Titus Neupert at University of Zürich (2018 – 2022)
thesis: "*Delicate Topological Insulators: a New World of Phases between Trivial and Fragile.*"

Charles C. Wojcik PhD student of Prof. Shanhui Fan at Stanford University, USA (2018 – 2019)
Supervision on 2 joint publications (topological band theory in non-Hermitian models).

Xiao-Qi Sun PhD student of Prof. Shoucheng Zhang at Stanford University, USA (2017 – 2020)
thesis: "*Conversion and braiding rules of band-structure nodes*"
Supervision on 4 joint publications (topological band theory, including driven and dissipative systems).

—

Aoxue Chen MSc student at ETH Zürich (2023 – 2024)
Preliminary thesis title: "*Response theory of hyperbolic non-Abelian semimetal.*"

Marcelo Looser MSc student at University of Zürich (2023 – 2024)
Preliminary thesis title: "*Super-cell approach to hyperbolic tight-binding models.*"

David M. Urwyler MSc student at University of Zürich (2021 – 2022)
thesis: "*Hyperbolic topological insulator.*"

Natascha A. Winter MSc student at University of Zürich (2019 – 2020)
thesis: "*Bulk-boundary correspondence in* PT*-symmetric models with non-Abelian band topology*"

—

František Dráček BSc student at Comenius University, Slovakia (2017 – 2018)
thesis: "*Stability of band-structure nodes against crystalline lattice distortions*"

Prizes, awards, fellowship

11/2022	The **SNSF Starting Grant**, from the Swiss National Science Foundation	(info)
08/2019	The **Ambizione grant**, from the Swiss National Science Foundation	(info)
09/2018	The **Dimistris N. Chorafas Prize** in recognition of the doctoral thesis	(info)
01/2018	The **Silver Medal of ETH Zürich** for exceptional doctoral thesis	(info)
12/2016	The **Gordon and Betty Moore Fellowship**, part of the EPiQS initiative	(info)
05/2013	The **winner** of the **Czecho-Slovak Student Science Fair** in Physics	(link)
03/2011	**3rd place**, the 3rd **International Student Physicists Tournament** (Russia) + **special prize** for the best presentation.	(info)

07/2010 **2nd prize**, the 17th **International Mathematical Competition** (Bulgaria) (link)

07/2007 **gold medal** (7th place), the 38th **International Physics Olympiad** (Iran) (link)
+ **special prize** for the highest score in the experimental exam

06/2007 **1st place** in the national **Mathematics on Correspondence** competition (info)

05/2005 **1st place**, the 3rd **European Union Science Olympiad** (Ireland) (info)

References

Prof. Dr. Manfred Sigrist
ETH Zürich, Switzerland
sigrist@itp.phys.ethz.ch
+41-44-633-2584

Prof. Dr. Ronny Thomale
Uni Würzburg, Germany
rthomale@physik.uni-wuerzburg.de
+49-931-31-86225

Prof. Dr. Christopher Mudry
Paul Scherrer Institute, Switzerland
christopher.mudry@psi.ch
+41-56-310-4247

Prof. Dr. Titus Neupert
Uni Zürich, Switzerland
neupert@physik.uzh.ch
+41-44-635-4800

Prof. Dr. Steven Kivelson
Stanford University, USA
kivelson@stanford.edu
+1-650-723-1974

Prof. Dr. Daniel Agterberg
Uni Wisconsin - Milwaukee, USA
agterber@uwm.edu
+1-414-229-3472

List of publications

Preprints

25. T. Tummuru, A. Chen, P. M. Lenggenhager, T. Neupert, J. Maciejko, and **T. Bzdušek**,
"Non-Abelian hyperbolic band theory from supercells"
arXiv:2307.09876 (2023)

Peer-reviewed

25. P. M. Lenggenhager, J. Maciejko, and **T. Bzdušek**,
"Non-Abelian hyperbolic band theory from supercells"
Phys. Rev. Lett. **131**, 226401 (2023) (arXiv:2305.04945)

24. A. Chen, Y. Guan, P. M. Lenggenhager, J. Maciejko, I. Boettcher, and **T. Bzdušek**,
"Symmetry and topology of hyperbolic Haldane models"
Phys. Rev. B **108**, 085114 (2023) (arXiv:2304.03273)

23. A. Chen, H. Brand, T. Helbig, T. Hofmann, S. Imhof, A. Fritzsche, T. Kießling, A. Stegmaier, L. K. Upreti, T. Neupert, **T. Bzdušek**, M. Greiter, R. Thomale, I. Boettcher
"Hyperbolic Matter in Electrical Circuits with Tunable Complex Phases"
Nat. Commun. **14**, 622 (2023) (arXiv:2205.05106)

22. D. M. Urwyler, P. M. Lenggenhager, I. Boettcher, R. Thomale, T. Neupert, and **T. Bzdušek**,
"Hyperbolic Topological Band Insulators"
Phys. Rev. Lett. **129**, 246402 (2022) (arXiv:2203.07292)

21. **T. Bzdušek** and J. Maciejko,
"*Flat bands and band-touching from real-space topology in hyperbolic lattices*"
Phys. Rev. B **106**, 155146 (2022) (Editors' Suggestion) (arXiv:2201.12653)

20. S.-B. Zhang, M. M. Denner, **T. Bzdušek**, M. A. Sentef, T. Neupert,
"*Symmetry breaking and spectral structure of the interacting Hatano-Nelson model*"
Phys. Rev. B **106**, L121102 (2022) (arXiv:2201.12653)

19. P. M. Lenggenhager, X. X. Liu, T. Neupert, and **T. Bzdušek**,
"Universal higher-order bulk-boundary correspondence of triple nodal points"
Phys. Rev. B **106**, 085129 (2022) (arXiv:2104.11254)

18. P. M. Lenggenhager, X. X. Liu, T. Neupert, and **T. Bzdušek**,
"Triple nodal points characterized by their nodal-line structure in all magnetic space groups"
Phys. Rev. B **106**, 085128 (2022) (Editors' Suggestion) (arXiv:2201.08404)

17. A. Nelson, T. Neupert, A. Alexandradinata, and **T. Bzdušek**,
"Delicate topology protected by rotation symmetry: Crystalline Hopf insulators and beyond"
Phys. Rev. B **106**, 075124 (2022) (Editors' Suggestion) (arXiv:2111.09365)

16. P. M. Lenggenhager, A. Stegmaier, L. K. Upreti, T. Hofmann, T. Helbig, A. Vollhardt, M. Greiter, C. H. Lee, S. Imhof, H. Brand, T. Kießling, I. Boettcher, T. Neupert, R. Thomale, **T. Bzdušek**,
"Simulating hyperbolic space on a circuit board"
Nat. Commun. **13**, 4373 (2022) (arXiv:2109.01148)

15. M. M. Denner, A. Skurativska, F. Schindler, M. H. Fischer, R. Thomale, **T. Bzdušek**, and T. Neupert,
"Exceptional topological insulators"
Nat. Commun. **12**, 5681 (2021) (arXiv:2008.01090)

14. A. Nelson, T. Neupert, **T. Bzdušek**, and A. Alexandradinata,
"Multicellularity of Delicate Topological Insulators"
Phys. Rev. Lett. **126**, 216404 (2021) (arXiv:2009.01863)

13. P. M. Lenggenhager, X. X. Liu, S. S. Tsirkin, T. Neupert, and **T. Bzdušek**,
"From triple-point materials to multiband nodal links"
Phys. Rev. B **103** L121101 (2021) (arXiv:2008.02807) (Erratum)

12. A. Bouhon, Q.-S. Wu, R.-J. Slager, H. Weng, O. V. Yazyev, and **T. Bzdušek**,
"Non-Abelian Reciprocal Braiding of Weyl Nodes and its Manifestations in ZrTe"
Nat. Phys. **16**, 1137—1143 (2020) (arXiv:1907.10611)

11. A. Bouhon, **T. Bzdušek**, and R.-J. Slager,
"Geometric approach to fragile topology beyond symmetry indicators"
Phys. Rev. B **102**, 115135 (2020) (arXiv:2005.02044)

10. X.-Q. Sun, C. C. Wojcik, S. Fan, and **T. Bzdušek**,
"Alice strings in non-Hermitian systems"
Phys. Rev. Research **2**, 023226 (2020) (arXiv:1905.04338)

09. A. Tiwari and **T. Bzdušek**,
"Non-abelian band topology of nodal-line rings in PT*-symmetric systems"*
Phys. Rev. B **101**, 195130 (2020) (Editors' Suggestion) (arXiv:1903.00018)

08. C. C Wojcik, X.-Q. Sun, **T. Bzdušek**, and S. Fan,
"Homotopy characterization of non-Hermitian Hamiltonians"
Phys. Rev. B **101**, 205417 (2020) (Editors' Suggestion) (arXiv:1911.12748)

07. Q.S. Wu, A. A. Soluyanov, and **T. Bzdušek**,
"*Non-Abelian band topology in noninteracting metals*"
Science **365**, 1273—1277 (2019) (arXiv:1808.07469)

06. X.-Q. Sun, M. Xiao, **T. Bzdušek**, S.-C. Zhang, and S. Fan,
"*Three-dimensional Chiral Lattice Fermion in Floquet Systems*"
Phys. Rev. Lett. **121**, 196401 (2018) (arXiv:1806.09296)

05. X.-Q. Sun, S.-C. Zhang, **T. Bzdušek**,
"*Conversion Rules for Weyl Points and Nodal Lines in Topological Media*"
Phys. Rev. Lett. **121**, 106402 (2018) (arXiv:1803.06364)

04. **T. Bzdušek** and M. Sigrist,
"*Robust doubly charged nodal lines and nodal surfaces in centrosymmetric systems*"
Phys. Rev. B **96**, 155105 (2017) (arXiv:1705.07126)

03. **T. Bzdušek**, Q.S. Wu, A. Rüegg, M. Sigrist, and A. A. Soluyanov,
"Nodal-chain metals"
Nature **538**, 75—78 (2016) (arXiv:1604.03112)

02. **T. Bzdušek**, A. Rüegg, and M. Sigrist,
"Weyl semimetals from spontaneous inversion symmetry breaking in pyrochlore oxides"
Phys. Rev. B **91**, 165105 (2015) (Editors' Suggestion) (arXiv:1501.03029)

01. **T. Bzdušek** and R. Hlubina,
"What is the Pairing Glue in the Cuprates? Insights from Normal and Anomalous Propagators"
Phil. Mag. **95**, 609—621 (2015) (arXiv:1401.5598)

Theses and Contributions to books

Doctoral Thesis: *Symmetry and Topology of Nodal Semimetals*
Advisor: Prof. Dr. Manfred Sigrist Year: 2017 (link)
Co-examiners: Prof. Dr. Titus Neupert, Prof. Dr. Daniel Agterberg
Thesis recognized by the *ETH Medal* and the *Dimitris N. Chorafas prize*.

Master's Thesis: *Anomalous Spectral Function of a Superconductor*
Advisor: Prof. Dr. Richard Hlubina Year: 2013 (link)
Co-examiner: Dr. Pavol Kalinay
Winner of the annual Czecho-Slovak Student Science Fair.

Bachelor's Thesis: *Study of superconductivity in the disordered Hubbard model*
Advisor: Prof. Dr. Richard Hlubina Year: 2010 (link – in Slovak language)
Co-examiner: Prof. Dr. Peter Markoš

Book: **T. Bzdušek**, J. Imriška, and J. Závodný: *Zbierka FX*, Trojsten, 2009, ISBN 978-80-970297-0-8
Collection of advanced and tricky high-school physics problems as a preparation for the International Physics Olympiad (published in Slovak language). I authored 17 of the 43 problem solutions. I initiated and supervised the publication of, and carried through the editing of the book. (Online access: http://old.fks.sk/fx/zbierka/knizka.pdf – in Slovak language)

Professional activities

Service to the profession

Refereeing: 90+ referee reports (journals incl.: *Physical Review B, X, Letters, and Materials; Nature, Nature Communications, NPJ Quantum Materials, Advanced Materials, Science, Journal of Physics: Condensed Matter, and PNAS* – *see details*)

Organizer: *Memorial Symposium for Alexey Soluyanov* (Zürich, Dec 2019).
Shoucheng Zhang Memorial Workshop (Stanford, May 2019).

Memberships: American Physical Society ("APS", since 2017).
Deutsche Physikalische Gesellschaft ("DPG", since 2023).

Invited talks, seminars & colloquia

32. Max Planck Institute for the Physics of Complex Systems, Germany (Nov 2023, host: Marin Bukov)
    "*Unraveling the spectra of hyperbolic lattices*"

31. Würzburg University, Germany (Dec 2022, host: Ronny Thomale)
    "*Topological hyperbolic matter*"

30. Seoul National University, South Korea (Apr 2022, host: Hongchul Choi)
    "*From hyperbolic drum towards hyperbolic topological insulators*"

29. University of Illinois Urbana-Champaign, IL, USA (Mar 2022, host: Xiao-Qi Sun)
    "*From hyperbolic drum towards hyperbolic topological insulators*"

28. University of Alberta, Edmonton, Canada (Mar 2022, host: J. Maciejko)
    "*Homotopic insights into topological band theory*"

27. University of Alberta, Edmonton, Canada (Mar 2022, host: J. Maciejko)
    "*Simulating hyperbolic matter on a circuit board*"

26. University of Cambridge, England (Nov 2021, host: R.-J. Slager)
    "*From hyperbolic drum towards hyperbolic topological insulators*"

25. MARVEL Junior seminar, virtual (Oct 2021, host: S. Fiore)
    "*Delicate topological insulators with and without crystalline symmetry*"

24. Kavli Institute for Theoretical Physics, Santa Barbara, CA, USA (Jul 2021, host: V. Gurarie)
    "*Homotopic insights into topological band invariants*"

23. Pennsylvania State University, State College, Pa, USA (Apr 2021, host: C.-x. Liu)
    "*Non-Abelian band topology in non-interacting metals*"

22. National Magnetic Field Laboratory, Tallahassee, FL, USA (Jan 2021, host: O. Vafek)
    "*Homotopic insights and non-Abelian invariants in topological band theory*"

21. University of Zürich, Switzerland (Dec 2020, host: T. Neupert)
    "*Homotopic insights into topological band theory*"

20. Southern University of Science and Technology, Shenzhen, China (Sep 2020, host: H.-Z. Lu)
    "*Exceptional Topological Insulators*"

19. University of Wisconsin–Milwaukee, WI, USA (Feb 2020, host: D. F. Agterberg)
    "*Mathematics of Topological Insulators and Semimetals*"

18. Singapore University of Technology and Design, Singapore (Sep 2019, host: S. A. Yang)
    "*Non-Abelian band topology in noninteracting metals*"

17. University of Zürich, Switzerland (May 2019, host: A. Soluyanov)
    "*Beyond the tenfold way: non-Abelian topology in noninteracting metals*"

16. Nordic institute for Theoretical Physics, Sweden (Oct 2018, host: A. Bouhon)
    "*Non-Abelian Statistics in Momentum Space*"

15. EPFL Lausanne, Switzerland (Sep 2018, host: O. V. Yazyev)
    "*Non-Abelian Statistics in Momentum Space*"

14. ETH Zürich, Switzerland (Sep 2018, host: M. Sigrist)
    "*Non-Abelian Statistics in Momentum Space*"

13. Rutgers University, NJ, USA (Feb 2018, host: D. Vanderbilt)
    "*Homotopy classification of band-structure nodes*"

12. University of Regensburg, Germany (Feb 2018, host: J. Fabian)
    "*Homotopy classification of band-structure nodes*"

11. Technical University of Munich, Germany (Jan 2018, host: S. Moroz)
    "*Homotopy classification of band-structure nodes*"

10. Comenius University in Bratislava, Slovakia (Jan 2018, host: R. Hlubina)
    "*Homotopy classification of band-structure nodes*"

09. ETH Zürich, Switzerland (Jan 2018, host: M. Sigrist)
    "*Homotopy classification of band-structure nodes*"

08. University of Cologne, Germany (Jul 2017, host: M. Hermanns)
    "*Organizing the zoo of band-structure nodes*"

07. University of Regensburg, Germany (Nov 2016, host: D. Kochan)
    "*Non-symmorphic route to nodal semimetals*"

06. Max Planck Institute for Quantum Optics, Germany (Nov 2016, host: A. Çakan)
    "*Non-symmorphic route to nodal semimetals*"

05. Paul Scherrer Institute, Switzerland (Oct 2016, host: M. Shi)
    "*Non-symmorphic route to nodal semimetals*"

04. Comenius University in Bratislava, Slovakia (Mar 2016, host: R. Hlubina)
    "*Nodal semimetals imposed by non-symmorphic symmetries*"

03. University of Uppsala, Sweden (Feb 2016, host: A. Black-Schaffer)
    "*Nodal lines imposed by non-symmorphic symmetries*"

02. Max Planck Institute for Solid State Research, Germany (May 2015; host: A. Schnyder)
    "*Weyl semimetal from spontaneous inversion symmetry breaking in pyrochlore oxides*"

01. Comenius University in Bratislava, Slovakia (Apr 2015; host: R. Hlubina)
    "*Topology in condensed matter physics*"

Conferences, workshops, and summer schools (talks)

21. The APS March Meeting, Minneapolis, USA (Mar 2024)
    "*Hyperbolic non-Abelian semimetal*"

20. Workshop on Gapless Topological Phases, Düsseldorf, Germany (Oct 2023)
    „*Hyperbolic non-Abelian semimetal*"

19. Summer School on Condensed Matter Physics, Liptovský Ján, Slovakia (Jun 2023)
    „*Topological invariants in band structures*"

18. Trends in Topological Materials Science and beyond, Prague, Czech Republic (Mar 2023)
    "*Hyperbolic topological band insulators*"

17. Topological Quantum Phases of Matter Beyond Two Dimensions, Paris, France (Oct 2022)
    "*From hyperbolic drum towards hyperbolic topological matter*"

16. The APS Match Meeting, Chicago, USA (Mar 2022)
    "*Topological hyperbolic band insulators*"

15. Three-Kings Physics Conference, online (Jan 2021)
    "*Non-Abelian topology of electron energy bands*"

14. MARVEL Review and Retreat, online (Sep 2020)
    "*Topological Euler class in Weyl semimetal ZrTe*"

13. Memorial Symposium for Alexey Soluyanov, Zürich, Switzerland (Dec 2019)
    "Nodal lines, chains and braids"

12. Trends in Theory of Correlated Materials, Kyoto, Japan (Oct 2019)
    "Non-Abelian band topology in noninteracting metals"

11. Relativity and Correlations in Topological Magnets, Mainz, Germany (Oct 2019)
    "Non-Abelian band topology in noninteracting metals" (Youtube link)

10. Workshop on Spin-Orbit Coupled Topological States, Pohang, South Korea (Sep 2019)
    "Non-Abelian band topology in noninteracting metals"

09. Effective Theories of Quantum Phases of Matter, Stockholm, Sweden (May 2019)
    "Beyond the Tenfold Way: Non-Abelian Topology in Noninteracting Metals"

08. The APS Match Meeting, Boston, USA (Mar 2019)
    "Non-Abelian Statistics in Momentum Space"

07. Topological Phases in Condensed Matter and Cold Atom Systems, Cargese, Italy (Oct 2018)
    "Non-Abelian Statistics in Momentum Space"

06. EPiQS Postdoctoral Symposium, Monterey, USA (May 2018)
    "Homotopic description of band-structure nodes"

05. The APS March Meeting, Los Angeles, USA (Mar 2018)
    "Homotopy approach to the classification of band-structure nodes"

04. MaNEP Workshop on Topological Quantum Phenomena, Zürich, Switzerland (Nov 2016)
    "Nodal-chain metals"

03. Trends in Theory of Correlated Materials, Villigen, Switzerland (May 2016)
    "Nodal chain metals"

02. Training Course in the Physics of Strongly Correlated Systems, Vietri sul Mare, Italy (Oct 2014)
    "Weyl semimetal from spontaneous inversion symmetry breaking in pyrochlore oxide"

01. Winter School on Mathematical Physics, Jánské Lázne, Czech Republic (Jan 2013)
    "Analytic continuation of imaginary frequencies data to real axis"

Conferences and workshops (posters)

15. Trends in the Theory of Quantum Materials, Zürich, Switzerland (Nov 2022)
    "From hyperbolic drum towards hyperbolic topological insulators"

14. Swiss Workshop on Mat's with Novel Electronic Properties, Les Diablerets, Switzerland (Aug 2022)
    "Topological hyperbolic band insulators"

13. Topological Materials: From Weak to Strong Correlations, Dresden, Germany (Apr 2022)
    "Topological hyperbolic band insulators"

12. Condensed Matter Theory "CMT@ZRH", Zürich, Switzerland (Sep 2021)
    "Synthetic hyperbolic matter in tight-binding models"

11. EPiQS Postdoctoral Symposium, Beverly, USA (Jun 2019)
    "Beyond the tenfold way: non-Abelian topology in noninteracting metals"

10. GRC Conference on Topological & Correlated Matter, Hong Kong, China (Jun 2017)
    "Doubly charged nodes in centrosymmetric systems"

09. Frontiers in Topological Quantum Matter, Stockholm, Sweden (May 2017)
    "Robust and multiply charged nodes in centrosymmetric systems"

08. Topological Quantum Matter, San Sebastian, Spain (Sep 2016)
"*Nodal-chain metals*"

07. MaNEP Workshop on Quantum Materials and El. Devices, Les Diablerets, Switzerland (Jul 2016)
"*Nodal Chain Metals*"

06. NCCR QSIT Winter School and General Meeting, Arosa, Switzerland (Feb 2016)
"*Nodal chain metals*"

05. Materials & Mechanisms of Superconductivity, Geneva, Switzerland (Aug 2015)
"*Determining the pairing glue in superconductors: Insights from normal & anomalous propagators*"

04. School and Workshop on Strongly Correlated Electronic Systems, Trieste, Italy (Aug 2015)
"*Weyl semimetal from spontaneous inversion symmetry breaking in pyrochlore oxides*"

03. GRC Conference on Topological & Correlated Matter, Hong Kong, China (Jul 2015)
"*Weyl semimetal from spontaneous inversion symmetry breaking in pyrochlore oxides*"

02. Boulder School: Modern Aspects of Superconductivity (Boulder, USA) (Jul 2014)
"*Topological Weyl semimetal in a spontaneously distorted pyrochlore lattice*"

01. Materials and Processes: Graduate Symposium, Zürich, Switzerland (Jun 2014)
"*Topological Weyl semimetal in a spontaneously distorted pyrochlore lattice*"

Outreach

Outreach talks

02. Vedatour, online (Jul 2020)
"*On defects, topology, and material research*" (in Slovak) (Youtube link)

01. Slovak Oxford Science, Pian di Scò, Italy (May 2014)
"*Emergent Nature of a Physical Law*"

Outreach activities

2018 – 2020 Contributor to Vedátor_SK (link in Slovak)
Facebook page with 30,000+ followers and 20+ contributors that popularizes Science topics aimed at general audience. I contributed (circa 2x/year) short articles in physics, astronomy & chemistry.

2007 – 2014 The **Physics Correspondence Competition** ("FKS"), Slovakia (link in Slovak)
Organizing competitions and special training programs in mathematics and physics for talented high-school students. In particular, I managed an "extra-difficult" category of the competition, aimed at preparing the best talents for the physics olympiad.

2007 – 2012 **Slovak Physics Olympiad**
Following my successful participation at the 2007 International Physics Olympiad (IPhO), I actively participated in the training of the Slovak IPhO team in each of the years 2008 – 2012.

2007 – 2012 **Young Physicists' Tournament** (YPT) in Slovakia, Austria and Germany
I annually participated as a juror at the national round of Slovak YTP. In years 2011 and 2012 I took the same role also at the Austrian YTP, and I trained the Slovak team for the International YPT. In 2012 I was invited as a juror to the International YPT in Germany.

2007 – 2010 **Teaching at Gymnazium Jura Hronca** (GJH) in Bratislava, Slovakia
I taught an extracurricular physics class for students interested in physics competitions. GJH is regularly rated among the top three high schools in Slovakia.

2014 – 2018 Blog "*The Gates of the Wonder World*"

Occasional blog where I attempted to communicate topics in quantum mechanics and condensed matter physics at the level of (motivated) high-school students.

Web access: https://tomasbzdusek.wordpress.com/