Curriculum Vitae – Leo S. Herr, Ph.D.

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Personal Information

Leo S. Herr
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About Me

My research is in Gromov-Witten Theory, Log Geometry, and Deformation Theory. I'm currently a postdoctoral researcher at Leiden University.

Employment

Postdoc Leiden University (September 1 2022 –) Mentor: David Holmes

Wylie Assistant Professor (Postdoc), University of Utah (2019 – 2022) Mentor: Y.P. Lee

Education

Doctorate in Mathematics, CU Boulder (2014 – August 22 2019). Advisor: Jonathan Wise

Bachelors' in Mathematics and Philosophy, Stony Brook University (2011-2014)

The Clarkson School Early College Program, Clarkson University (2010-2011) Transferred.

Research

Log geometry and Gromov-Witten theory

- *The log product formula.* Algebra and Number Theory (2023). arXiv link. Published version.
- *The log product formula in quantum K theory.* Joint with You-Cheng Chou and Yuan-Pin Lee. Mathematical Proceedings of the Cambridge Philosophical Society (2023). arXiv link. Published version.
- *Costello's pushforward formula: errata and generalization.* Joint with Jonathan Wise. Manuscripta Mathematica (2022). arXiv link. Published version.
- *The log tangent space of the log jet space.* To appear in Michigan Mathematical Journal. arXiv link.
- *Higher Genus Quantum K-theory.* Joint with You-Cheng Chou and Y.P. Lee. arXiv link.
- *Logarithmic Hochschild co/homology via formality of derived intersections.* Joint with Márton Hablicsek and Francesca Leonardi. arXiv link.

Number theory

- *The Scheme of Monogenic Generators I: Representability.* Joint with Sarah Arpin, Sebastian Bozlee, and Hanson Smith. Research in Number Theory (2023). arXiv link. Published version.
- *The Scheme of Monogenic Generators II: Local Monogenicity and Twists.* Joint with Sarah Arpin, Sebastian Bozlee, and Hanson Smith. Research in Number Theory (2023). arXiv link. Published version.

Deformation theory

- *Deformations of modules through butterflies and gerbes.* Journal of Pure and Applied Algebra. arXiv link. Published version.
- *Deformations of Algebras with 2-Extensions* arXiv link.

Teaching

Leiden University:

Co-instructor Algebraic Curves: Fall 2022 and Fall 2023, Calculus 1: 2 sections Spring 2023.

University of Utah:

Primary Instructor Linear Algebra: Fall 2021, Spring 2022, Modern Algebra 2 (rings, fields, and modules): Spring 2021, Intro to Number Theory: Fall 2020, Calculus 3: 2 Sections Spring 2020 (transitioned to online teaching due to Covid-19)

University of Colorado Boulder:

Primary Instructor Calculus 2: Fall 2018, Spring 2019; Calculus 1 : Fall 2015, Spring 2016, Spring 2017, Spring 2018

Assistant Teacher Calculus 2 : Fall 2016; Calculus 1 : Spring 2015; Finite Math : Fall 2014; Precalculus : Fall 2017

Teaching Software

Endless linear algebra website

Developed python code to write "endless" linear algebra practice problems for students. Put them on `http://www.endlesslinearalgebra.com/` for students to master linear algebra skills outside the classroom.

Students

You-Cheng Chou – Ph.D. co-advised with Y.P. Lee.

Francesco Angeli – Masters' co-advised with Jorge Vitória

Diversity and Inclusion

Outspoken proponent of diversity initiatives.

Supporter of Federico Ardila's axioms.

Participant in many trainings and activities, such as the interrupting sexism training, the diversity committee "Chats," fixing the leaky pipeline, etc.

Seminars Led

Organizer for:

Utah Algebraic Geometry Seminar Co-organized the official Utah Algebraic Geometry Seminar for the 2021-22 year with Alicia Lamarche.

Log Geometry Research Seminar with Y.P. Lee and You-Cheng Chou (Fall 2019 Utah)

Log Geometry and $\mathscr{D}$-modules Graduate student reading seminar (Spring 2020 – ended early due to Covid-19)

Mirror Symmetry Graduate student seminar (Fall 2019 Utah)

∞-Categories reading Jacob Lurie's *Higher Topos Theory*. (Spring 2016 CU)

Leadership Initiatives

Founding President of the local chapter of the AMS at CU Boulder. (2016-2018)

Co-ran study session series for graduate students to pass the Algebra Prelim (Fall 2014)

Teaching weekly high school and undergraduate extracurricular advanced math courses. Associated with Boulder Valley School District Mentor Program. Topics: Topology, Algebra, Differential Geometry, Category Theory, some Analysis. (2015 - 2019)

Participated in the "Portal to the Public" Program, coordinated by CU Science Discovery. (Fall 2017)

Grants, Awards

Partial Postdoctoral Support from NSF RTG Grant #1840190 (Fall 2019 - Spring 2022)

Sieglinde Haller Scholarship (Summers 2017, 2018)

Pre-Doctoral Fellowship (Fall 2017)

Frances C. Stribic Scholarship (Summer 2016)

Research Experience for Graduates Summer Research (Summer 2015)

Invited Talks

Log Intersection theory

- Logarithmic geometry and moduli spaces workshop in Frankfurt, 2023. video.
- Groningen University seminar, 2023
- ETH seminar Zürich, 2022
- Utrecht University seminar, 2022

Log Geometry and the Product Formula

- Young Researcher's Conference on Non-Archimedean and Tropical Geometry 2019. Universität Regensburg, Germany – forty-five minute talk
- MAA General Contributed Paper Session on Algebra, Joint Mathematics Meetings (JMM) 2019. Baltimore, MD – Ten-minute talk

- AMS Special Session in Algebraic Geometry 2018. San Francisco, CA – Twenty-minute talk
- FRAgmeNT 2018, Colorado State University. Fort Collins, CO – Two-hour talk

Deformations of Modules and Butterflies

- Topological Approaches in Algebraic Geometry (TAAAG) Fall 2016. Athens, GA – Ten-minute talk

Other

- *Euler Characteristic in Pictures* – Steminar Spring 2017 – Talk for graduate students in various STEM disciplines
- *Topological André-Quillen Cohomology* – Talbot Summer 2017; CU Boulder Topology Research Seminar – Topological Enhancements of Deformation-Theoretic Tools

Referee reports manuscripta mathematica, Mathematical Research Letters, Communications in Algebra, Transactions of the American Mathematical Society, and more.

Skills Latex Proficiency

Experience with Python, Flask, C++, Javascript, HTML/CSS, etc.

Conversational German, some Dutch and French, minimal Spanish and Japanese.

References Available upon request.