Michail Savvas - Curriculum Vitae

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RESEARCH INTERESTS

Enumerative geometry, moduli theory, Donaldson–Thomas theory, derived algebraic & differential geometry, derived categories & stability conditions, logarithmic geometry, artificial intelligence

EMPLOYMENT

The University of Iowa	Iowa City, Iowa, U.S.A.
Tenure-Track Assistant Professor	07/2024 - 06/2025
The University of Texas at Austin	Austin, Texas, U.S.A.
Postdoctoral Instructor	07/2021 - 06/2024
University of California, San Diego	La Jolla, California, U.S.A.
S.E.W. Visiting Assistant Professor	07/2018 - 06/2021

EDUCATION

Stanford University	Stanford, California, U.S.A.
Ph.D. in Mathematics. Advisor: Jun Li.	09/2012 - 06/2018
Thesis: Generalized Donaldson–Thomas Invariants via Kirwan Blowups.	
University of Cambridge, Trinity College	Cambridge, U.K.

- Master of Mathematics ("Cambridge Part III"), *Distinction*.   10/2011 - 06/2012
  Part III Essay : Cohomology of coherent sheaves on complex
  algebraic varieties and Hodge theory.
- B.A. Honours Mathematics, *First Class Honours* in each year.   10/2008 - 06/2011

PUBLICATIONS AND PREPRINTS

Good Moduli Spaces in Derived Algebraic Geometry (with E. Ahlqvist, J. Hekking and M. Pernice). *Submitted*. `arXiv:2309.16574`.

Cosection Localization for D-Manifolds and (-2)-Shifted Symplectic Derived Schemes, Revisited. **Mathematische Zeitschrift** 308, 42 (2024). `arXiv:2309.03066`.

Stabilizer Reduction for Derived Stacks and Applications to Sheaf-Theoretic Invariants (with J. Hekking and D. Rydh). *Submitted*. `arXiv:2209.15039`.

Virtual Riemann–Roch Theorems for Almost Perfect Obstruction Theories. **manuscripta mathematica** 173, 463–498 (2024). `arXiv:2207.14397`.

The d-critical Structure on the Quot Scheme of Points of a Calabi–Yau 3-fold (with A. Ricolfi). **Communications in Contemporary Mathematics**, Vol. 415, No. 8, 1–45 (2024). `arXiv:2106.16133`.

Cosection Localization and Vanishing for Virtual Fundamental Classes of D-Manifolds. **Advances in Mathematics**, Volume 398, 2022, 108232. `arXiv:2007.14023`.

Localizing Virtual Structure Sheaves for Almost Perfect Obstruction Theories (with Y.-H. Kiem). **Forum of Mathematics, Sigma**, Volume 8, 2020, e61. `arXiv:2007.06820`.

Intrinsic Stabilizer Reduction and Generalized Donaldson–Thomas Invariants. **Journal of the Institute of Mathematics of Jussieu**, 22(4), 1987-2025. `arXiv:2005.13768`.

K-Theoretic Generalized Donaldson–Thomas Invariants (with Y.-H. Kiem). **International Mathematics Research Notices (IMRN)**, Volume 2022, Issue 3, February 2022. `arXiv:1912.04966`.

Generalized Donaldson–Thomas Invariants via Kirwan Blowups (with Y.-H. Kiem and J. Li). **Journal of Differential Geometry**, 127 (3) 1149 - 1205, July 2024. `arXiv:1712.02544`.

Reduce, Reuse, Recycle: Categories for Compositional Reinforcement Learning (with G. Bakirtzis, S. Chinchali, U. Topcu and R. Zhao). Proceedings of the **European Conference on Artificial Intelligence (ECAI)**, 2024. `arXiv:2408.13376`.

Categorical Semantics of Compositional Reinforcement Learning (with G. Bakirtzis and U. Topcu).

Journal of Machine Learning Research (to appear). `arXiv:2208.13687`.

Shutout Games on Graphs (with A. Cioba). **Mathematika**, volume 61 (2015), issue 03, pp. 523-530. Preprint version available `here`.

GRANTS AND SCHOLARSHIPS		
AMS-Simons Travel Grant		07/2019 - 08/2023
Onassis Foundation Graduate Scholarship		09/2016 - 08/2018
A.G. Leventis Foundation Scholarship		09/2016 - 08/2017
Stanford Graduate Fellowship		09/2012 - 08/2017

William R. and Sara Hart Kimball Fellow for three years.

George and Marie Vergottis Bursary   10/2008 - 06/2011

Three year scholarship from the Vergottis Fund of the Cambridge European Trust.

Woods Fund for summer research, Trinity College, Cambridge.   2011

Heilbronn Prize for outstanding academic performance, Trinity College, Cambridge.   2011

Senior Scholarship for outstanding academic performance, Trinity College, Cambridge.   2010, 2011

Junior Scholarship for outstanding academic performance, Trinity College, Cambridge.   2009

IKY (State Scholarships Foundation, Greece) Scholarships   2007, 2008

Scholarships for ranking third in the entrance examinations for the E.C.E. school of N.T.U.A. and ranking first at the end of the first academic year.

Nikolaos G. Papadimitriou Foundation Scholarship   10/2007 - 06/2009

INVITED RESEARCH VISITS	
KTH Royal Institute of Technology, Stockholm, Sweden.	07/2022
Seoul National University, Seoul, South Korea.	05/2018, 05/2022
Institut des Hautes Études Scientifiques (IHÉS), Bures-sur-Yvette, France.	06/2019 - 09/2019

INVITED TALKS	
Algebra Seminar, Cornell University.	April 2025
Spring Central Sectional Meeting of the American Mathematical Society, University of Kansas.	March 2025
Geometry & Topology Seminar, University of Iowa.	May 2024, August 2024
Algebraic Geometry Seminar, Columbia University.	March 2024
Algebra & Geometry Day at Thessaloniki, Aristotle University of Thessaloniki.	December 2023
Algebra Seminar, University of Oregon.	October 2023
Geometry Seminar, Texas A&M University.	October 2023
Algebraic Geometry and Number Theory Seminar, Rice University.	September 2023
Workshop on Moduli Spaces, Virtual Invariants and Shifted Symplectic Structures, Korea Institute for Advanced Study (KIAS).	June 2023
Algebra Seminar, Michigan State University.	February 2023
Mathematical Physics Seminar, University of Pennsylvania.	February 2023
Algebraic Geometry Seminar, University of Michigan.	February 2023
Department Colloquium, Stony Brook University.	October 2022
Algebraic Geometry Seminar, Stony Brook University.	October 2022
Geometry Seminar, University of Texas, Austin.	September 2022
Algebra, Number Theory and Combinatorics Session, Second Congress of Greek Mathematicians, National Technical University of Athens.	July 2022
Greek Mathematical Seminar, online.	June 2022
Algebraic Geometry Seminar, Seoul National University.	May 2022
Algebraic Geometry Seminar, Stanford University.	April 2022
Department Colloquium, University of Hawaiʻi at Mānoa.	March 2022
Geometry Seminar, Aristotle University of Thessaloniki, Greece.	November 2021
Algebraic Geometry in String Theory Seminar, Harvard Center of Mathematical Sciences and Applications (CMSA).	November 2021
Enumerative Geometry Seminar, University of California, San Diego.	October 2021
Algebraic Geometry Seminar, University of Trieste and SISSA.	May 2021

Geometry Seminar, University of Texas, Austin.	March 2021
Spring Eastern Sectional Meeting of the American Mathematical Society.	March 2021
Algebra Seminar, University of Oregon.	November 2020
Southern California Algebraic Geometry Seminar, University of Southern California.	October 2019
More Algebraic Geometry at Imperial College Seminar, Imperial College London.	June 2019
Algebraic Geometry Seminar, University of California, San Diego.	September 2018
Algebraic Geometry Seminar, Seoul National University.	May 2018
Moduli Spaces and Representation Theory Seminar,	April 2018
Mathematical Sciences Research Institute.	
Algebraic Geometry Seminar, University of Arizona.	March 2018
Algebraic Geometry Seminar, Columbia University.	February 2018
Shanghai Center for Mathematical Sciences, Fudan University.	August 2017

TEACHING, MENTORING AND OUTREACH

The University of Iowa
Instructor of Record

MATH:2700 : Introduction to Linear Algebra.	Spring 2025
MATH:1850 : Calculus I.	Fall 2024

The University of Texas at Austin
Instructor of Record

M 408K : Differential Calculus.	Fall 2023
M 408C : Differential and Integral Calculus.	Fall 2021
M 328K : Introduction to Number Theory.	Spring 2023
M 365C : Real Analysis I.	Fall 2022

Sunday Morning Math Group (SMMG)   Fall 2022 - present
Gave an expository talk on the Banach–Tarski Paradox in April 2023.
Volunteering to lead and assist with SMMG outreach activities for students,
teachers, and parents.

Prison Mathematics Project   08/2022 - present
Volunteering as a "pen-pal" mentor for an incarcerated adult to provide
support and guidance for self-education in algebra.

UT Math Club   Spring 2023
Gave an expository talk titled "Moduli Spaces in Geometry".

Mathematicians of Color Alliance of Texas (MoCAT) Pizza Seminar   Spring 2021
Gave an introductory background talk on Diophantine Equations.

University of California, San Diego
Instructor of Record

MATH 10A : Calculus I.	Fall 2018, Fall 2019
MATH 10B : Calculus II.	Winter 2019, Winter 2020, Spring 2021
MATH 18 : Linear Algebra.	Spring 2021
MATH 102 : Applied Linear Algebra.	Spring 2019, Fall 2019
MATH 109 : Mathematical Reasoning.	Winter 2019, Winter 2020, Winter 2021

Research Communications Program Mini-Grant   11/2019 - 09/2020
Grant for project aiming to develop visual metaphors and host presentations
to communicate algebraic geometry at a K-12 school in the San Diego area.

Research Brief for General Audience   September 2020
YouTube video, available here, to communicate my research to a wide audience.

Teaching and Learning Commons Content Training Speaker   Winter 2020
Presentation on effective learning strategies for mathematics courses
for Supplemental Instruction leaders and tutors.

Association for Women in Mathematics (AWM) Mentor   Spring 2021
Served as a mentor for a graduate student as part of UCSD's chapter of AWM
one-on-one mentoring program for graduate students and postdocs.

Stanford University
Instructor of Record

MATH 20 : Calculus.	Fall 2017, Winter 2018

Teaching Assistant (TA)

MATH 63CM : Modern Mathematics: Continuous Methods.	Spring 2017
MATH 53 : Differential Equations with Linear Algebra.	Spring 2016
MATH 53H : Honors Multivariable Mathematics, Ordinary Differential Equations.	Spring 2015
MATH 51 : Linear Algebra and Differential Calculus of Several Variables.	Winter 2014

Course Assistant (CA)

MATH 215A : Complex Analysis (graduate level).	Fall 2014
MATH 120 : Groups and Rings.	Fall 2013

Stanford Undergraduate Research Institute in Mathematics (SURIM) Summer 2016
Graduate student mentor for 4 Stanford undergraduate students working on group research project "Toric Varieties and their Geometry".

Teaching Assistant Mentor Spring 2016 & 2017
Provided teaching guidance to 2 Stanford graduate students.

Stanford Math Directed Reading Program (DRP) Spring 2017
Mentored a first-year undergraduate student learning about complex analysis.

PROFESSIONAL SERVICE

Referee reports and quick opinions for: Geometry & Topology, Documenta Mathematica, Selecta Mathematica, International Mathematics Research Notices, Journal of Algebraic Geometry, Journal of Differential Geometry, Advances in Mathematics, Acta Mathematica Sinica, English Series, Bulletin of the London Mathematical Society, Proceedings of the Royal Society A, Forum of Mathematics, Sigma, Moduli, Compositio Mathematica, Advances in Geometry.

Reviewer for: Zentralblatt MATH, Mathematical Reviews.

Co-organizer of the Geometry and Topology seminar at the University of Iowa during the academic year 2024-2025.

Co-organizer of the Geometry seminar at the University of Texas at Austin during the academic year 2022-2023 and the Algebraic Geometry seminar at the University of California, San Diego during the academic year 2020-2021.

TA for the research project "Compositional Generalization in Reinforcement Learning" of the 2025 Adjoint School.

Led one of the Exercise/Q & A sessions for Richard Thomas' minicourse on Vafa-Witten invariants for the 2021 IHÉS Summer School "Enumerative Geometry, Physics and Representation Theory".

AWARDS AND HONORS

Silver medal in the International Mathematics Competition (**IMC**) for University students, Blagoevgrad, Bulgaria.	July 2008
Bronze medal in the South Eastern European Mathematical Olympiad for University Students (**SEEMOUS**), Athens, Greece.	March 2008
Bronze medal in the International Mathematical Olympiad (**IMO**), Hanoi, Vietnam.	July 2007
Bronze medal in the Balkan Mathematical Olympiad (**BMO**), Rhodes, Greece.	May 2007
Gold medal in the Hellenic Mathematical Olympiad (**HMO**), Athens, Greece.	February 2007