Tyson Ritter

Department of Mathematics and Physics
University of Stavanger
PO Box 8600 Forus
4036 Stavanger

Tel: +47 5183 1502
E-mail: tyson.ritter@uis.no

Education

PhD (Mathematics), University of Adelaide, Australia. Conferred 31 December 2011.

BSc(MaCompSc)(Honours), University of Adelaide, Australia, 2004.

BE(Hons), University of Adelaide, Australia, 2003.

BSc, University of Adelaide, Australia, 2002.

BSc(MaCompSc), University of Adelaide, Australia, 2001.

Current and Previous Positions

Achieved Merittert Underviser status, Department of Mathematics and Physics, University of Stavanger, Norway, 2023.

Associate Professor, Department of Mathematics and Physics, University of Stavanger, Norway, Apr. 2016–Ongoing.

Postdoctoral Research Fellow, Department of Mathematics, University of Oslo, Norway, Oct. 2013–Mar. 2016.

Australian Research Council Research Associate, School of Mathematical Sciences, University of Adelaide, Australia, Feb. 2012–Sept. 2013.

Australian Mathematical Society Lift-Off Fellow, School of Mathematical Sciences, University of Adelaide, Australia, Dec. 2011–Feb. 2012.

Part-time lecturing and tutoring, School of Mathematical Sciences, University of Adelaide, Australia, 2009–2012.

Research Engineer, School of Electrical and Electronic Engineering, University of Adelaide, Australia, 2005–2008.

Part-time lecturing and tutoring, School of Mathematical Sciences, University of Adelaide, Australia, 2002–2004.

Research

My research interests lie in pure mathematics, within the fields of complex analysis in several variables and complex geometry. I am particularly interested in the modern and active topic of Oka theory, which deals with holomorphic flexibility properties of complex manifolds and has close links to algebraic

topology and homotopy theory. I also enjoy studying questions relating to properties of Riemann surfaces and Stein manifolds, such as the existence of holomorphic immersions, embeddings, and proper maps into other complex manifolds.

PhD Thesis

Acyclic Embeddings of Open Riemann Surfaces into Elliptic Manifolds, University of Adelaide, 2011. Supervisors: Prof. Finnur Lárusson and Assoc. Prof. Nicholas Buchdahl.

Peer-reviewed Publications

Families of proper holomorphic embeddings and Carleman-type theorem with parameters. Journal of Geometric Analysis, **33** (2023) no.3, Paper No. 75, 19 pp. MR4531052.

A soft Oka principle for proper holomorphic embeddings of open Riemann surfaces into $(\mathbf{C}^*)^2$. Journal für die Reine und Angewandte Mathematik, **745** (2018) 59–82. MR3881472.

Proper holomorphic embeddings into Stein manifolds with the density property (with R. Andrist, F. Forstnerič, and E.F. Wold).
Journal d'Analyse Mathématique, **130** (2016) 135–150. MR3574650.

Oka properties of ball complements (with F. Forstnerič).
Mathematische Zeitschrift, **277** (2014) 325–338. MR3205776.

Proper holomorphic immersions in homotopy classes of maps from finitely connected planar domains into $\mathbf{C} \times \mathbf{C}^*$ (with F. Lárusson).
Indiana University Mathematics Journal, **63** (2014) 367–383. MR3233212.

Acyclic embeddings of open Riemann surfaces into new examples of elliptic manifolds.
Proceedings of the American Mathematical Society, **141** (2013) 597–603. MR2996964.

A strong Oka principle for embeddings of some planar domains into $\mathbf{C} \times \mathbf{C}^*$.
Journal of Geometric Analysis, **23** (2013) 571–597. MR3023850.

Other Scientific Works

Lift-off fellowship report: a strong Oka principle for circular domains.
The Australian Mathematical Society Gazette, **40** (2013), 115–117. MR3088778.

Invited Conference Talks

Proper holomorphic embeddings of open Riemann surfaces into Stein complex surfaces, Workshop on Holomorphic Maps, Pluripotentials and Complex Geometry, Shizuoka, Japan, March 2019.

Carleman approximation by holomorphic automorphisms of Danielewski surfaces, Mapping problems and complex manifolds in projective spaces, Oslo, Norway, December 2018.

Embeddings of Riemann surfaces into Danielewski surfaces, Frontiers in Elliptic Holomorphic Geometry, Jevnaker, Norway, Oct. 2016.

A soft Oka principle for proper holomorphic embeddings of open Riemann surfaces, Symposium of Sanya School in Complex Analysis and Geometry, Tsinghua Sanya International Mathematics

Forum, China, Jan. 2016.

Oka properties of ball complements, School and Workshop on Complex Analysis, Geometry and Dynamics, International Centre for Theoretical Physics (ICTP), Trieste, Italy, Sept. 2015.

A soft Oka principle for proper holomorphic embeddings of open Riemann surfaces, NORDAN Conference in Complex Analysis, University of Iceland, Apr. 2015.

On a null-homotopic embedding of the punctured plane into $\mathbf{C} \times \mathbf{C}^*$, Mini-workshop in Elliptic Complex Geometry, NORDAN Conference in Complex Analysis, University of Iceland, Apr. 2015.

A soft Oka principle for proper holomorphic embeddings of open Riemann surfaces, Norwegian Spanish Workshop in Complex Variables and Applications, University Complutense of Madrid, Feb. 2015.

A strong Oka principle for proper immersions of finitely connected planar domains into $\mathbf{C} \times \mathbf{C}^*$, Workshop on Several Complex Variables, University of Ljubljana, Sept. 2012.

Selected Conference Talks

A strong Oka principle for proper immersions of finitely connected planar domains into $\mathbf{C} \times \mathbf{C}^*$, KAWA 2013 Workshop in Complex Analysis, University of Toulouse, Jan. 2013.

Acyclic embeddings of open Riemann surfaces into elliptic manifolds, Geometry and Topology Session, Annual Meeting of the Australian Mathematical Society, Wollongong, 2011.

A strong Oka principle for embeddings of Riemann surfaces into $\mathbf{C} \times \mathbf{C}^*$, Geometry and Topology Session, Annual Meeting of the Australian Mathematical Society, Brisbane, 2010.

Invited Seminar Talks

Embeddings of open Riemann surfaces, Mathematics Colloquium, University of Bern, May 2019.

Lectures on Oka theory, Seminar on Complex Geometry and Analysis, University of Iceland, April 2018.

Oka properties of ball complements, Joint Seminar on Complex Algebraic Geometry and Complex Analysis, University of Wuppertal, Nov. 2015.

A soft Oka principle for proper holomorphic embeddings of open Riemann surfaces, Complex Geometry seminar, University of Vienna, Nov. 2014.

A soft Oka principle for proper holomorphic embeddings of open Riemann surfaces, Norwegian Complex Geometry network meeting, NTNU, Trondheim, Oct. 2014.

A soft Oka principle for proper holomorphic embeddings of open Riemann surfaces, Complex Geometry and Complex Analysis Seminar, University of Ljubljana, Apr. 2014.

Oka properties of ball complements, Norwegian Complex Geometry network meeting, NTNU, Trondheim, Nov. 2013.

A strong Oka principle for proper embeddings of open Riemann surfaces into $\mathbf{C} \times \mathbf{C}^*$, Differential Geometry Seminar, University of Adelaide, May 2013.

Oka theory and the Oka principle in complex geometry, University of Glasgow, Feb. 2013.

Acyclic embeddings of open Riemann surfaces into new examples of elliptic manifolds, Complex Geometry and Complex Analysis Seminar, University of Ljubljana, Oct. 2012.

Acyclic embeddings of open Riemann surfaces into new examples of elliptic manifolds, Differential Geometry Seminar, University of Adelaide, 2012.

A strong Oka principle for embeddings of some planar domains into $\mathbf{C} \times \mathbf{C}^*$, Differential Geometry Seminar, University of Adelaide, 2011.

Conferences and Workshops Attended

Stein manifolds and holomorphic mappings, Ljubljana, Slovenia, September 2018.

Winter School and Symposium of Sanya School in Complex Analysis and Complex Geometry, Tsinghua Sanya International Mathematics Forum, China, Jan. 2016.

School and Workshop on Complex Analysis, Geometry and Dynamics, International Centre for Theoretical Physics (ICTP), Trieste, Italy, Sept. 2015.

International Conference on Complex Geometry and Several Complex Variables, East China Normal University, Shanghai, China, May 2015.

NORDAN Conference in Complex Analysis, University of Iceland, Apr. 2015.

KAWA 2015 Workshop in Complex Analysis, Centro de Giorgi, Pisa, Italy, Mar. 2015.

Several Complex Variables Symposium, Tsinghua Sanya International Mathematics Forum, China, May 2014.

KAWA 2014 Workshop in Complex Analysis, CIRM, Marseille, France, Mar. 2014.

KAWA 2013 Workshop in Complex Analysis, University of Toulouse, France, Jan. 2013.

Workshop on Several Complex Variables, University of Ljubljana, Slovenia, 2012.

Conferences organised

NORDAN 2018, Nordic conference on complex analysis and related topics. Co-organiser. Stavanger, May 2018.

Funding Grants

Innovative teaching methods for increasing students' in-depth understanding in mathematics and natural sciences, UHR-MNT education project, University of Stavanger, 2021-2022. Awarded 100 000 NOK.

Digital Assessment in Mathematics with STACK, TEKNAT faculty education project, University of Stavanger, July 2019-December 2020. Awarded 255 000 NOK.

Event Support Funding, Norwegian Research Council, for conference NORDAN 2018 in complex analysis, held in Stavanger, May 2018. Awarded 100 000 NOK, Dec. 2017.

Applied to Norwegian Research Council for Young Research Talent grant, for project 'Deformations of Stein Manifolds'. Not selected for funding, but received favourable evaluation with overall grade 6 (out of a maximum 7). Dec. 2015.

Teaching

Teaching Accreditation and Awards

Achieved Merittert Underviser status, University of Stavanger, 2023.

Best Lecturer at Master's Level, University of Stavanger, 2022.

Lecturing

Real and Complex Calculus, Spring 2024.

Discrete Mathematics, Autumn 2023.

Real and Complex Calculus, Spring 2023.

Discrete Mathematics, Autumn 2022.

Algebraic Geometry, Spring 2022.

Dybdeforståelse og formidling i matematikk, Autumn 2021.

Dybdeforståelse og formidling i matematikk, Autumn 2020.

Vektoranalyse, University of Stavanger, Autumn 2020.

Introduction to Python programming course, University of Stavanger, Spring 2020.

Dybdeforståelse og formidling i matematikk, Autumn 2019.

Vektoranalyse, University of Stavanger, Autumn 2018.

Matematisk Analyse II, University of Stavanger, Spring 2018.

Vektoranalyse, University of Stavanger, Autumn 2017.

Matematisk Analyse II, University of Stavanger, Spring 2017.

Vektoranalyse, University of Stavanger, Autumn 2016.

Introduction to Complex Analysis, University of Oslo, Autumn 2014.

Mathematics IA (Algebra), University of Adelaide, Semester 2, 2011.

Mathematics for Information Technology I (Discrete Mathematics), University of Adelaide, Semester 2, 2011.

Mathematics IA (Algebra), University of Adelaide, Semester 2, 2010.

Mathematics IA (Calculus), University of Adelaide, Semester 1, 2010.

Seminars organised

Co-organiser of TEKNAT Faculty Pedagogical Seminar, University of Stavanger, 2022-ongoing.

Organiser of IMF Institute Pedagogical Seminar, University of Stavanger, 2022-ongoing.

Professional Development

MatRIC Mathematics Teaching Course, 100 hours, University of Agder, 2020.

UniPed, 150 hours, University of Stavanger pedagogy basis course, 2019-2020.

NyTi, 50 hours, pedagogy course for new employees, University of Stavanger, 2016.

Supervision

Mar Saiz Aparicio, mathematics PhD, University of Stavanger, January 2024-ongoing.

Tiril Abrahamsen, 3rd year bachelor research project, University of Stavanger, 2023.

Morten Eriksen, 3rd year bachelor research project, University of Stavanger, 2023.

Mar Saiz Aparicio, mathematics master's research project, University of Stavanger, 2022.

Sunniva Fosnes Ramstad, lektorutdanning master's research project, University of Stavanger, 2020.

Guro Vestly, lektorutdanning master's research project, University of Stavanger, 2020.

Simen Urianstad, 3rd year bachelor research project, University of Stavanger, 2020.

Jone Moldsvor, 3rd year bachelor research project, University of Stavanger, 2019, 2020.

Ola Nes, 3rd year bachelor research project, University of Stavanger, 2019.

Jardar Kårstad, 3rd year bachelor research project, University of Stavanger, 2019.

Daniel Holmen, 3rd year bachelor research project, University of Stavanger, 2018.

Johan Åmdal Eliassen, 3rd year bachelor research project, University of Oslo, 2015.

Stine Gustavsen, 3rd year bachelor research project, University of Oslo, 2014.

Outreach and Dissemination Activities

Lead organiser of Mathematics and Physics stand at University of Stavanger Open Day, 2024.

Co-organiser of Mathematics and Physics stand at Teknologiaften (for female high-school students), University of Stavanger, 2024.

Lead organiser of Mathematics activities at public outreach Museumsnatt event, Autumn 2023.

Lead organiser of Mathematics and Physics stand at University of Stavanger Open Day, 2023.

Co-organiser of maths and physics drop-in support centre, University of Stavanger, Autumn 2022.

Lead organiser of Mathematics activities at public outreach Museumsnatt event, Autumn 2022.

Co-organiser of Mathematics and Physics stand and talks at University of Stavanger Open Day, 2022.

Lead organiser of Mathematics activities at public outreach Museumsnatt event, Autumn 2021.

Co-organiser of Mathematics and Physics stand and talks at University of Stavanger Open Day, 2020.

Lead organiser of Mathematics activities at public outreach Museumsnatt event, Autumn 2019.

Co-organiser of University of Stavanger Mathematics Circle, regular extracurricular mathematics activities for interested VGS students, Spring 2019.

Lead organiser of Big Day of Maths, a day of mathematics activities for 280 VGS students at University of Stavanger, March 2019.

Co-organiser of Mathematics and Physics stand and talks at University of Stavanger Open Day, March 2019.

Organiser of regular mathematics and physics social evenings with guest speakers, June 2018 - December 2020.

Presented mathematics talk and led activity with mathematics videregåendeskole teachers, Fagdagen, Sandnes Videregåendeskole, November 2018.

Attended MatRIC programming workshop, Gardermoen, Oslo, November 2018.

Attended MatRIC contact group meeting, Gardermoen, Oslo, October 2018.

Attended Nordic GeoGebra meeting, Copenhagen, Denmark, September 2018.

Presented mathematics talks and led mathematics activities with visiting videregåendeskole students, University of Stavanger, 2017–Ongoing.

Presented mathematics talk and led activity with mathematics videregåendeskole teachers, Fagdagen, University of Stavanger, 2017.

Responsible for developing mathematics exhibit and activities, Open Day, University of Stavanger, 2017–2018.

Developed and staffed mathematics exhibit to attract prospective students, Open Day, University of Adelaide, 2011.

Delivered talk to secondary school teachers, Annual Conference of the Mathematical Association of South Australia, 2011.

Professional Responsibilities

Local contact member at University of Stavanger for MatRIC, Centre for Research, Innovation and Coordination of Mathematics Teaching, Norway.

Reviewer for the Bulletin of the Australian Mathematical Society, Apr. 2017–Ongoing.

Reviewer for Proceedings of the AMS, Feb. 2017–Ongoing.

Reviewer for Geometry & Topology, Nov. 2016–Ongoing.

Reviewer for The Journal of Geometric Analysis, Sept. 2016–Ongoing.

Reviewer for International Mathematics Research Notices, Apr. 2015–Ongoing.

Reviewer for Mathematical Reviews, Jun. 2013–Ongoing.