Nick Salter

CITIZENSHIP United States of America

CONTACT INFORMATION
Department of Mathematics
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Notre Dame, IN 46556

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RESEARCH INTERESTS Topology and geometry, with an emphasis on families of Riemann surfaces (key words: mapping class groups, monodromy problems, moduli spaces of Riemann surfaces, strata of abelian differentials/translation surfaces).

EMPLOYMENT

University of Notre Dame, Notre Dame, IN

Assistant Professor August 2021 - present

Columbia University, New York, NY

Ritt Assistant Professor July 2018 - July 2021

NSF MSPRF postdoc July 2018 - July 2020
Sponsoring Scientist: Walter Neumann.

Harvard University, Cambridge, MA

NSF MSPRF postdoc July 2017 - July 2018
Sponsoring Scientist: Joe Harris.

EDUCATION

University of Chicago, Chicago, IL

Ph.D Mathematics June 2017
Advisor: Benson Farb.

M.S. Mathematics June 2013

Reed College, Portland, OR

B.A. Mathematics May 2011

Budapest Semesters in Mathematics, Budapest, Hungary Spring 2010

PUBLICATIONS AND PREPRINTS

Papers available electronically at `http://nsalter.science.nd.edu/research`.

Holomorphic maps between configuration spaces of Riemann surfaces, submitted (with Lei Chen).

Totally symmetric sets in the general linear group, Michigan Math. J., to appear (with Noah Caplinger).

Simple closed curves in stable covers of surfaces, submitted.

Surface bundles and the section conjecture, Math. Ann., to appear (with Wanlin Li, Daniel Litt, and Padmavathi Srinivasan).

Vanishing cycles, plane curve singularities, and framed mapping class groups, Geom. Topol., to appear (with Pablo Portilla Cuadrado).

Global fixed points of mapping class group actions and a theorem of Markovic, J. Topol., to appear (with Lei Chen).

Framed mapping class groups and the monodromy of strata of Abelian differentials, J. Eur. Math. Soc., to appear (with Aaron Calderon).

Relative homological representations of framed mapping class groups, Bull. Lond. Math. Soc., 53 (2021) no. 1 204–219 (with Aaron Calderon).

Higher spin mapping class groups and strata of Abelian differentials over Teichmüller space, Adv. Math., to appear (with Aaron Calderon).

Linear-central filtrations and the image of the Burau representation, Geom. Dedicata 211, 145–163 (2021).

Section problems for configurations of points on the Riemann sphere, Algebr. Geom. Topol. 20-6 (2020), 3047–3082 (with Lei Chen).

Arithmeticity of the monodromy of some Kodaira fibrations, Compos. Math., 155(1), 114-157 (with Bena Tshishiku).

The Birman exact sequence does not virtually split, Math. Res. Lett., to appear (with Lei Chen).

Monodromy and vanishing cycles in toric surfaces, Invent. Math (2019) 216:153-213.

On the monodromy group of the family of smooth plane curves, preprint.

Cup products in surface bundles, higher Johnson invariants, and MMM classes, Math. Z., 288(3), 1377-1394.

On the non-realizability of braid groups by diffeomorphisms, Bull. Lond. Math. Soc. 48 (2016), no. 3, 457–471 (with Bena Tshishiku).

Surface bundles over surfaces with arbitrarily many fiberings, Geom. Topol. 19-5 (2015), 2901–2923.

PUBLICATIONS AND PREPRINTS

Cup products, the Johnson homomorphism, and surface bundles over surfaces with multiple fiberings, Algebr. Geom. Topol. 15-6 (2015), 3613–3652.

Sandpiles and dominos, Electron. J. Comb, Volume 22, Issue 1 (2015) (with Laura Florescu, Daniela Morar, David Perkinson and Tianyuan Xu).

A note on the critical group of a line graph, Electron. J. Comb, Volume 18, Issue 1 (2011) (with David Perkinson and Tianyuan Xu).

HONORS AND AWARDS

NSF standard grant "Monodromy in topology and geometric group theory" awardee, grant no. DMS-2003984 (Rated: Highly Recommended)
NSF MSPRF awardee, grant no. DMS-1703181
University of Chicago McCormick Fellowship, September 2011
Phi Beta Kappa, inducted May 2011.

SERVICE

Referee or quick opinion for the following journals: Algebr. Geom. Topol., Ann. Henri Lebesgue, Bull. London Math. Soc., Commentarii, Crelle, Forum Math. Sigma, Geom. Topol., Geom. Topol. Monogr., Invent. Math., J. Inst. Math. Jussieu, J. Knot Theory Ramif., J. London Math. Soc., J. Math. Phys., J. Pure Appl. Algebra, J. Topol. Anal., Math. Annalen, Math. Z., Manuscripta Math., Michigan Math. J., New York J. Math, Proc. Amer. Math. Soc., Rocky Mountain J. Math., Selecta Math.
Regular contributor to Mathscinet reviews.
Organizer, Columbia University Geometry/Topology seminar.
Notre Dame graduate admissions committee, 2022, 2023.

TEACHING

University of Notre Dame:

2022-2023 - Instructor - Basic Geometry/Topology, Calculus II, Complex Variables

2021-2022 - Instructor - Calculus II, Complex Variables

Columbia University:

2020-2021 - Instructor - Complex Variables, Calculus II

2018-2019 - Instructor - Calculus I, Linear Algebra

University of Chicago:

2016-2017 - Instructor - MATH 195, 196

2015-2016 - Instructor - MATH 195, 196

2014-2015 - Instructor - MATH 153, 195, 196 (Calculus III, MV calc for social science, linear algebra for social science)

2013-2014 - Instructor - MATH 151-152-153 (Calculus I - III)

MENTORING **Columbia University:**

Spring 2019 - present: mentored local high school student (now MIT undergraduate) Merrick Cai. Supervised research project on the subject of representations of Artin groups.

Summer 2019 - mentored Columbia undergrad Destine Lee. Conducted reading course on differential topology via the book of Guillemin–Pollack.

Summer 2020 - Columbia University REU (supervised Columbia undergraduates Destine Lee, Iris Rosenblum-Sellers, Jakwanul Safin, Anda Tenie in a research project in geometry/topology).

University of Chicago:

University of Chicago REU mentor (2013, 2015)

Mentor - independent study course on mapping class groups (Spring 2016)

Directed Reading Program mentor (4 quarters total from 2012-2017)