Simon Pepin Lehalleur

Curriculum Vitae

Personal information and contact

Nationality: French

Professional adress:
Freie Universität Berlin
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RESEARCH

Research areas

Algebraic geometry

Arithmetic geometry

Homotopy theory

Research interests

Motivic homotopy theory, relative motives, Grothendieck operations formalism

Relative 1-motives, abelian schemes, Picard schemes, Neron models and related objects

Motives of moduli spaces

Exponential motives and exponential periods

Rigid-analytic motivic homotopy theory

Research positions

Principal Investigator SPP 1786 (Wissenschaflicher Mitarbeiter) 2019-
(research group of Prof. Hélène Esnault, Freie Universität Berlin)

Postdoc (Wissenschaftlicher Mitarbeiter) 2018-
(research group of Prof. Hélène Esnault, Freie Universität Berlin)

Einstein fellowship postdoctoral position 2016-2018
(research group of Prof. Hélène Esnault, Freie Universität Berlin)

Ph.D. with Prof. Joseph Ayoub (Universität Zürich), defended 6th of November 2015 2011-2015
Title: "An abelian category of relative 1-motives"

2 years as a Ph.D. student in Paris 13 under the supervision of Prof. Jörg Wildeshaus 2009-2011

Publications

Subgroups of maximal rank of reductive groups, in "Autour des schémas en groupes", *Panoramas et Synthèses* 47, 2015

On the relative motive of a commutative group scheme (with G.Ancona and A.Huber), *Algebraic geometry*, vol. 3 issue 2, 2016

Triangulated categories of relative 1-motives, *Advances in Mathematics*, vol. 347, 2019

Constructible 1-motives and exactness of realisation functors, accepted for publication in Documenta Mathematica

Preprints (available on the arxiv and on my webpage)

On the Voevodsky motive of the moduli stack of vector bundles on a curve (with V.Hoskins), arXiv:1711.11072

A formula for the Voevodsky motive of the moduli stack of vector bundles on a curve (with V.Hoskins), arXiv:1809.02150

On the Voevodsky motive of the moduli space of Higgs bundles on a curve (with V.Hoskins), arXiv:1910.04440

Invited research visits

Tokyo Institute of Technology, Tokyo 09/2018

Mittag-Leffler Institute, Stockholm 01/2017

Tata Institute, Mumbai 10/2016

Conference talks

On the motive of the moduli space of Higgs bundles, SPP Jahrestagung, Essen 10/2019

A formula for the motive of the moduli stack of vector bundles, GLEN, Manchester 03/2019

Foliated cohomology at the generic point, Motives, Foliations and the Conservativity conjecture, Berlin 09/2018

E-localisation, Motives, Foliations and the Conservativity conjecture, Berlin 09/2018

E-localisation, Conservativity conjecture workshop (Harumura) 09/2018

The Voevodsky motive of the moduli stack of vector bundles, NoGAGS Berlin 11/2017

Reductive group schemes, Workshop on equivariant and motivic homotopy, Osnabrück 10/2017

The motivic t-structure for relative 1-motives, Annual Meeting of the SPP 1786 03/2017

The motivic t-structure for relative 1-motives, Conference "Generalizations of $\mathbb{A}^1$-Homotopy Invariance in Algebraic Geometry and Homotopy Theory" 04/2016

An introduction to motivic homotopy theory, Motivic Homotopy theory day, FU Berlin 03/2016

The Borel-De Siebenthal theorem, Luminy (SGA3 summer school) 09/2011

Seminar talks

A formula for the Voevodsky motive of the moduli stack of vector bundles, Berlin 10/2018

A formula for the Voevodsky motive of the moduli stack of vector bundles over a curve, Tokyo Institute of Technology 09/2018

Triangulated categories of relative 1-motives, University of Illinois Urbana Champaign 03/2018

The Voevodsky motive of the moduli stack of vector bundles, University of Illinois Chicago 03/2018

Constructible 1-motives, KTH Stockholm 02/2018

On the motive of the stack of vector bundles on a curve, Oxford University 02/2018

The Voevodsky motive of the moduli stack of vector bundles, FU Berlin 02/2017

The motivic t-structure for relative 1-motives, Rennes 11/2016

Relative 1-motives, Tata Institute Mumbai 10/2016

Triangulated categories of 1-motivic sheaves, Singapore 08/2016

The motivic t-structure for relative 1-motives, Regensburg 01/2016

The motivic t-structure for relative 1-motives, Freiburg (Oberseminar) 10/2015

Deligne 1-motives in the triangulated categories of mixed motives, Paris Réga 12/2012

RESEARCH GRANTS

SPP 1786, Project "Exponential motivic homotopy theory, foliations and applications", Principal investigator, 213 600 EUR 2018-2020

Forschungskredit: Candoc, Principal investigator, University of Zürich, 55200 CHF 2013-2014

STUDENT SUPERVISION

Master thesis on "Relative Galois theory of ∞-topoi and the relative Étale homotopy type", Louis Martini (in progress) Exp.2019

Master thesis on "Galois representations attached to modular forms of weight 2", Dimitri Loutchko 2019

Master thesis on "Model categories and unstable $\mathbb{A}^1$-homotopy category", Viktor Tabakov 2019

Bachelor thesis on "The Étale fundamental group and the regular inverse Galois problem", Louis Martini 2018

TEACHING

Recent Teaching

Freie Universität Berlin (2016-)

Student seminar "Categories and infinity-categories" WS18

Teaching assistant for "Local Class Field Theory" WS18

Student seminar "Differential Galois Theory" SS18

Teaching assistant for "Complex Analysis" SS18

Graduate course "Models of curves and abelian varieties" SS17

University of Zürich (2011-2015):

Linear Algebra I-II (Bachelor course, Universität Zürich, in German) WS14-SS15

Programming in Python (Bachelor course, Universität Zürich) Winter semester 2013

Differential forms in topology (Masters course, Universität Zürich) Spring semester 2013

Algebraic Geometry (Masters course, Universität Zürich) Winter semester 2012

Probability and statistics for science students (Bachelor course, University Zürich, in German) Spring semester 2012)

Linear Algebra and Geometry for teaching students (Bachelor course, University Zürich, in German) Winter semester 2011

Université Paris XIII: (2009-2011):

Mathematics for Computer science (Bachelor course for computer science students, Paris XIII, in French) Spring semester 2011

Linear Algebra (Bachelor course, Paris XIII, in French) Winter semester 2010

ORGANISATION

Conference organisation

Co-organisation of Arbeitsgemeinschaft "Motives, Foliations and the Conservativity Conjecture" (Humboldt University) 24/09/18-28/09/18

Co-organisation of summer school "Motives for periods" (FU Berlin) 28/08/2017-1/09/2017

Seminar organisation

Supervised seminar on "Motivic Galois groups and periods" in Prof. Esnault's research group 2016

Co-organised the Graduate Colloquium of the Graduate School of Mathematics of Zürich 2013-2014

EDUCATION

Master in mathematics with distinction in University Paris 7 Denis Diderot 2008

"Agrégation de Mathématiques" 2007

Bacherlor in mathematics with distinction, université Paris 11 Orsay 2006

Passed the competitive examination to enter the Ecole Normale Supérieure 2005

Participated in the International Mathematical Olympiads 2003

"Concours Général de mathématiques", Paris, 3rd place 2003

SERVICE

Referee work

Refereed for Advances in Mathematics, Annales scientifiques de l'ENS, Tohoku mathematical journal

Zentrallblatt and Mathreviews

Reviewed 8 papers for Zentralblatt and Mathreviews.

LANGUAGES

Languages

French : native

English : written, spoken (fluent)

Spanish : written, spoken (near-fluent)

German : written, spoken (B2)