

# Simon Pepin Lehalleur

## Curriculum Vitae

### Personal information and contact

**Nationality:** French

**Professional adress:**

Freie Universität Berlin  
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### RESEARCH

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#### 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 (Wissenschaftlicher Mitarbeiter) (research group of Prof. Hélène Esnault, Freie Universität Berlin)	2019-
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Postdoc (Wissenschaftlicher Mitarbeiter) (research group of Prof. Hélène Esnault, Freie Universität Berlin)	2018-
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Einstein fellowship postdoctoral position (research group of Prof. Hélène Esnault, Freie Universität Berlin)	2016-2018
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Ph.D. with Prof. Joseph Ayoub (Universität Zürich), defended 6th of November 2015 <b>Title:</b> “An abelian category of relative 1-motives”	2011-2015
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2 years as a Ph.D. student in Paris 13 under the supervision of Prof. Jörg Wildeshaus	2009-2011
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#### 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,  
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

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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

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Master thesis on “Relative Galois theory of $\infty$ -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

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### 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



German : written, spoken (B2)