

# FANGZHOU JIN

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## Employment

- 2020.12 - **Assistant professor**, *Tongji University*, Shanghai, China.  
present
- 2018.01 - **Postdoctoral fellow**, *Universität Duisburg-Essen*, Essen, Germany.  
2020.11 In the working group of Prof. Marc Levine.  
Supported by DFG Priority Programme SPP 1786 and Marc Levine's ERC Advanced Grant QUADAG.
- 2016.10 - **Postdoctoral fellow**, *Universität Regensburg*, Regensburg, Germany.  
2017.12 In the working group of Prof. Denis-Charles Cisinski.  
Supported by SFB 1085 Higher Invariants, funded by the DFG.

## Education

- 2016 **Ph. D. in Mathematics**, *Ecole Normale Supérieure de Lyon*, Lyon, France.  
Advisor: Frédéric Déglise.  
Dissertation title: *Quelques aspects sur l'homologie de Borel-Moore dans le cadre de l'homotopie motivique: poids et G-théorie de Quillen* (On some aspects of Borel-Moore homology in motivic homotopy: weight and Quillen's G-theory).
- 2013 **Diploma of the ENS, specialized in Mathematics**, *Ecole Normale Supérieure*, Paris, France.
- 2012 **M.A. in Pure Mathematics**, *Université Paris-Diderot*, Paris, France.  
Summa cum laude  
Advisor: Francis Brown.  
Master thesis title: *Dénombrabilité polynomiale des hypersurfaces de graphe*.
- 2010 **B.A. in Mathematics**, *Université Paris-Diderot*, Paris, France.  
Summa cum laude

## Research interests

**Algebraic Geometry, Pure motives, Mixed motives, Algebraic cycles, Algebraic K-theory, Motivic homotopy theory.**

## Mathematical texts

### Publications

- 2021 F. Déglise, F. Jin, A. Khan, *Virtual fundamental classes in motivic homotopy theory*, to appear in J. Eur. Math. Soc..
- 2021 F. Jin, E. Yang, *Künneth formulas for motives and additivity of traces*, Adv. Math. **376** (2021), Article ID 107446.
- 2016 F. Jin, *Borel-Moore motivic homology and weight structure on mixed motives*, Math. Z. **283** (2016), no. 3, 1149-1183.

### Prepublications

- 2020 F. Jin, *Local terms of the motivic Verdier pairing*, arXiv:2010.09292.

- 2020 F. Jin, *On some finiteness results in real étale cohomology*, arXiv:2009.00396.
- 2020 F. Jin, H. Xie, *A Gersten complex on real schemes*, arXiv:2007.04625.
- 2019 F. Déglise, J. Fasel, F. Jin, A. Khan, *On the rational motivic homotopy category*, arXiv:2005.10147.
- 2018 F. Jin, *Algebraic G-theory in motivic homotopy*, arXiv:1806.03927.

#### Other texts

- 2012 F. Jin, *Introduction aux motifs de Voevodsky*, fourth year thesis at ENS under the supervision of Frédéric Déglise.
- 2010 S. Franceschi, F. Jin, *Irrationalité, transcendance et indépendance  $\mathbb{Q}$ -linéaire des valeurs de la fonction zêta aux points entiers*, CultureMATH-ENS Paris, march 2011, first year thesis at ENS under the supervision of Joël Merker.

### Talks

- 2020.11 **Trace maps in motivic homotopy**, seminar on virtual fundamental classes, Universität Duisburg-Essen.
- 2020.11 **A Gersten complex on real schemes**, RTG seminar, Universität Duisburg-Essen.
- 2020.11 **The Chern-Schwartz-MacPherson class**, seminar on virtual fundamental classes, Universität Duisburg-Essen.
- 2020.10 **Absolute purity in motivic homotopy theory**, seminar, Peking University.
- 2020.08 **Absolute purity in motivic homotopy theory**, 2nd Kyoto-Hefei Workshop on Arithmetic Geometry, Kyoto University.
- 2020.06 **Quasi-smooth pullbacks on algebraic cobordism**, seminar on derived algebraic geometry and algebraic cobordism, Universität Duisburg-Essen.
- 2020.05 **Introduction to derived algebraic geometry I: derived schemes and the cotangent complex**, seminar on derived algebraic geometry and algebraic cobordism, Universität Duisburg-Essen.
- 2020.01 **Logarithmic localized intersection product**, seminar on Bloch's conductor formula, Universität Duisburg-Essen.
- 2019.11 **The Ogg-Shafarevich formula**, seminar on Bloch's conductor formula, Universität Duisburg-Essen.
- 2019.10 **Absolute purity in motivic homotopy theory**, seminar, Bergische Universität Wuppertal.
- 2019.10 **The characteristic class of a motive**, SPP 1786 Jahrestagung, Universität Duisburg-Essen.
- 2019.05 **The motivic nearby fiber**, seminar on  $K_0(\mathrm{Var}_k)$ , motivic integration and characteristic classes, Universität Duisburg-Essen.
- 2019.02 **Fundamental Classes in Motivic Homotopy Theory**, seminar, Tongji University.
- 2018.11 **Presentability, compact and dualizable objects**, workshop "The universality of  $\mathbb{A}^1$ -motivic stable homotopy following Robalo", Université de Bourgogne.
- 2018.10 **Mumford's infinite dimensionality theorem**, seminar on 0-cycles and related topics, Universität Duisburg-Essen.
- 2018.08 **Category of spectra and algebraic K-theory**, seminar "K-theory, determinant and epsilon factor", Universität Regensburg.
- 2018.04 **Basic categorical notions in infinity categories**, seminar "Introduction to infinity categories", Universität Duisburg-Essen.

- 2018.04 **The Goodwillie theorem**, seminar "*Algebraic K-theory and topological cyclic homology*", Universität Duisburg-Essen.
- 2018.02 **Representability of algebraic K-theory in motivic homotopy**, Winter School:  $\mathbb{A}^1$ -Homotopy Theory, Freiburg Institute for Advanced Studies.
- 2017.12 **Lambda operations and Riemann-Roch theorems**, seminar "*Motivic Sheaves*" organized by Prof. Cisinski, Universität Regensburg.
- 2017.05 **Artin representability theorem**, Higher Invariant Oberseminar, Universität Regensburg.
- 2017.05 **Completely decomposable topologies and cd-structures**, seminar "*Motivic Sheaves*" organized by Prof. Cisinski, Universität Regensburg.
- 2017.01 **Borel-Moore motivic homology and weight structures**, SCMS Seminar, Shanghai Center for Mathematical Sciences, Fudan University.
- 2016.12 **Borel-Moore motivic homology and weight structures**, SFB-Seminar, Universität Regensburg.
- 2016.11 **Motivic cohomology following Voevodsky**, seminar "*Around the Hopkins-Morel-Hoyois isomorphism*", Universität Regensburg.
- 2016.01 **Chern classes and computations of Chow groups of  $SL(E)$** , workshop "*A conjecture of Suslin according to Merkurjev*", ENS Lyon.
- 2015.12 **Cycle complexes associated to cycle modules**, workshop "*A conjecture of Suslin according to Merkurjev*", ENS Lyon.
- 2015.09 **Borel-Moore motivic homology and weight structure on mixed motives**, Seminars of Arithmetic and Motivic Geometry, Université Paris 13.
- 2014.10 **The Chow-Künneth decomposition**, workshop, ENS Lyon.
- 2013.06 **The coniveau spectral sequence and motives**, seminar Mathjeunes, ENS Paris.
- 2013.05 **The monodromy of the Dwork family**, workshop "*Around Fermat's Last Theorem*", ENS Paris.
- 2011.05 **Shellability and lexicographical shellability**, workshop "*Simplicial methods in algebra and topology*", under the supervision of Benoît Fresse, ENS Paris.
- 2011.03 **Ehrhard's inequality for the Gaussian measure by the heat semi-group**, workshop "*Isoperimetric inequalities*", under the supervision of Dario Cordero-Erausquin, ENS Paris.
- 2010.12 **Lehmer's problem and Dobrowolski's theorem**, workshop "*Algebra and Geometry*", with Ruslan Maximau, under the supervision of Nicolas Ratazzi, ENS Paris.
- 2010.12 **Higher categories and topological quantum field theory**, workshop, with François-Régis André and Olivier Wang, under the supervision of Grégory Ginot, ENS Paris.

## Conferences and events

- 2020.09 **Motivic Geometry**, conference, The Centre for Advanced Study, Norwegian Academy of Science and Letters, Oslo (online conference).
- 2020.08 **2nd Kyoto-Hefei Workshop on Arithmetic Geometry**, conference, Kyoto University, Kyoto (online conference).
- 2020.07 **Motivic, Equivariant and Non-commutative Homotopy Theory**, summer school, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette (online conference).
- 2019.10 **SPP 1786 Jahrestagung**, conference, Universität Duisburg-Essen, Essen.
- 2019.09 **School on Motives and Stacks**, summer school, Universität Duisburg-Essen, Essen.

- 2019.09 **Computations in motivic homotopy theory**, *autumn school*, Universität Regensburg, Regensburg.
- 2018.11 **The universality of  $\mathbb{A}^1$ -motivic stable homotopy following Robalo**, *workshop*, Université de Bourgogne, Dijon.
- 2018.07 **Motives and Algebraic Cycles**, *conference*, Freiburg Institute for Advanced Studies, Freiburg.
- 2018.05 **Motivic homotopy theory and refined enumerative geometry**, *conference*, Universität Duisburg-Essen, Essen.
- 2018.03 **Motives in Tokyo, on the occasion of Shuji Saito's 60th Birthday**, *conference*, University of Tokyo, Tokyo.
- 2018.02  **$K$ -theory,  $\mathbb{A}^1$ -homotopy and quadratic forms**, *conference*, University of Warwick, Coventry.
- 2018.02 **Winter School:  $\mathbb{A}^1$ -Homotopy Theory**, *winter school*, Freiburg Institute for Advanced Studies, Freiburg.
- 2017.07 **Motives: arithmetic, algebraic geometry and topology under the white-blue sky**, *conference*, Ludwig-Maximilians-Universität, Munich.
- 2017.06 **Etats de la Recherche: Derived Algebraic Geometry and Interactions**, *conference*, Institut de Mathématiques de Toulouse, Toulouse.
- 2017.05 **K-Theory and Related Fields**, *Hausdorff Trimester Program*, Hausdorff Research Institute for Mathematics, Bonn.
- 2017.03 **Hot Topics: Galois Theory of Periods and Applications**, *conference*, Mathematical Sciences Research Institute, Berkeley.
- 2016.10 **Cubic fourfolds, hyper-Kähler varieties and algebraic cycles**, *conference with mini-course by Claire Voisin*, Institut Camille Jordan, Lyon.
- 2016.06 **Aspects pro-finis dans la topologie**, *Journée de Géométrie et Topologie Clermont-Ferrand-Grenoble-Lyon*, ENS Lyon, Lyon.
- 2016.06 **Algèbre et Théorie des Nombres, Rencontres Lyon/Ottawa**, *conference*, Institut Camille Jordan, Lyon.
- 2015.06 **Mathematics of the 21st century: the vision of Alexander Grothendieck**, *conference*, Université de Montpellier, Montpellier.
- 2015.05 **Géométrie, arithmétique et physique: autour des motifs**, *95e rencontre entre mathématiciens et physiciens théoriciens*, Institut de Recherche Mathématique Avancée, Strasbourg.
- 2014.09 **(A)round forms, cycles and motives**, *conference*, Johannes Gutenberg-Universität Mainz, Mainz.
- 2014.08 **International Conference on  $K$ -Theory and Related Topics**, *conference*, Chinese Acad. of Sciences, Beijing.
- 2014.06 **Valeurs spéciales de fonctions  $L$** , *summer school*, ENS Lyon, Lyon.
- 2013.09 **Motivic Galois Groups**, *summer school/conference*, Alfréd Rényi Institute of Mathematics, Budapest.
- 2013.07 **International Congress of Chinese Mathematicians**, National Taiwan University, Taipei.
- 2013.06 **Géométrie Arithmétique  $p$ -adique**, *conference*, ENS Lyon, Lyon.
- 2012.01 **Arithmetic, Motives and Moduli Spaces**, *colloquium*, ENS Paris, Paris.

- 2011.10 **Galois bicentenary conference**, *conference*, Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette.
- 2011.06 **Motives and Milnor conjecture**, *summer school*, Institut de Mathématiques de Jussieu, Paris.
- 2010.10 **Journée d'exposés sur les travaux de Gregori Margulis**, ENS Paris, Paris.

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## Teaching experience

- 2018-2019 **Algebraic Topology 2**, *graduate course*, Universität Duisburg-Essen.
- 2018-2019 **Introduction to Topology**, *undergraduate course*, Universität Duisburg-Essen.
- 2017-2018 **Algebraic Topology 2**, *graduate course*, Universität Duisburg-Essen.
- 2017-2018 **Exercise sessions for the course *Algebraische Topologie***, *graduate course*, Universität Regensburg.
- 2016-2017 **Exercise sessions for the course *Higher category theory and homotopical algebra***, *graduate course*, Universität Regensburg.
- 2013-2016 **Exercise sessions for the course *Algèbre 2***, *third year undergraduate course*, ENS Lyon.
- 2014-2016 **Exercise sessions for the course *Algèbre 1***, *third year undergraduate course*, ENS Lyon.
- 2013-2014 **Oral examiner at the CPES class**, *first year undergraduate class*, ENS Lyon.

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## Linguistic skills

Chinese	Native
English	Fluent
French	Fluent
Japanese	Elementary
German	Beginner