

ALEXANDRE MINETS

NATIONALITY: Belarusian, French
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RESEARCH INTERESTS:

Geometric representation theory, moduli spaces of sheaves, cohomological Hall algebras, KLR algebras, quiver varieties.

EMPLOYMENT:

2021-present Postdoctoral research associate at the *University of Edinburgh*, UK
2018-2021 Postdoctoral researcher at HAUSEL GROUP, *IST Austria*, Klosterneuburg, Austria

EDUCATION:

2015-2018 PhD student in MATHEMATICS, *Université Paris-Sud*, Orsay, France
Topic: “Nakajima varieties associated to curves” | Advisor: OLIVIER SCHIFFMANN
defended on *September 3, 2018*,
2012-2015 Élève at *École Normale Supérieure*, Paris, France
2014 Master 2 in MATHEMATICS, mention “très bien” (GPA 18/20), *Paris 7*
2013 Master 1 in MATHEMATICS, mention “très bien” (GPA 17,8/20), *Paris 6*
2009-2012 Student in APPLIED MATHEMATICS, *Belarusian State University*, Minsk, Belarus

PAPERS:

- On the cohomological Hall algebra of zero-dimensional sheaves on a smooth surface (joint with A. Mellit, O. Schiffmann, E. Vasserot), *in preparation*
- $P = W$ via \mathcal{H}_2 (joint with T. Hausel, A. Mellit, O. Schiffmann), *preprint*, [arXiv:2209.05429](https://arxiv.org/abs/2209.05429)
- KLR and Schur algebras of curves and semi-cuspidal representations (joint with R. Maksimau), *International Mathematics Research Notices* (2022), DOI: [10.1093/imrn/rnac055](https://doi.org/10.1093/imrn/rnac055)
- Cohomological Hall algebras for Higgs torsion sheaves, moduli of triples and sheaves on surfaces, *Selecta Mathematica* (2020) 26:30 (67 pages), DOI: [10.1007/s00029-020-00553-x](https://doi.org/10.1007/s00029-020-00553-x)

INVITED TALKS:

2022 EPFL, Algebraic Geometry Seminar
A proof of $P = W$ conjecture
University of Edinburgh, Hodge Seminar
The $P = W$ conjecture
2021 University of Edinburgh, EGRET Seminar
Mirror symmetry and compactified Jacobians
MFO, workshop “Enveloping Algebras and Geometric Representation Theory”
Semicuspidal categories of affine KLR algebras
University of Edinburgh, Hodge Seminar
KLR algebras in positive characteristic and their stratifications

- 2020 RepNet Virtual Seminar
KLR and Schur algebras for curves and semi-cuspidal representations
 Institut Henri Poincaré, Colloque Tournant
Schur algebras of curves and semi-cuspidal categories
- 2019 University of Stuttgart, Algebra Seminar
Cohomological Hall algebras and sheaves on surfaces
 USTC Hefei, Séminaire MathJeunes
Hall algebras and sheaves on surfaces
 Academia Sinica, Postdoc Seminar
Hall algebras and sheaves on surfaces
 University of Edinburgh, Geometric Representation Theory and Low-dimensional Topology Conference
A primer on cohomological Hall algebras
 Universität Bonn, Representation Theory Seminar
Shuffle presentation of cohomological Hall algebras for curves
 University of Edinburgh, ARTIN 2019
Cohomological Hall algebras and sheaves on surfaces
 Université de Montpellier, AGATA Seminar
K-theoretic Hall algebras of surfaces and quantum toroidal \mathfrak{gl}_n
- 2018 IST Austria, Algebraic Geometry Seminar
Cohomological Hall algebras and their representations
 IST Austria, Working Seminar
Hall algebras and moduli of sheaves (mini-course)
- 2017 Institut Henri Poincaré, Séminaire RÉGA
GIT for algebraic stacks (expository)
 Isle of Wight, British Isles Graduate Workshop
 $P = W$ conjecture (expository)
 RIMS, Algebraic Analysis and Representation Theory Conference
Cohomological Hall algebras for Higgs torsion sheaves on curves (poster)
- 2015 University of Wuppertal, School on Kac Conjectures and Quiver Varieties
Proof of second Kac conjecture (expository, with H. Franzen)
 École Normale Supérieure, Séminaire MathJeunes
Hall algebras and quantum groups (expository)

TEACHING EXPERIENCE:

- 2020 Co-taught graduate course “ \mathcal{D} -modules” (with Quoc P. Ho)
IST Austria, Klosterneuburg, Austria
- 2015-2017 Teaching assistant, *Université Paris-Sud*, Orsay, France:
 • Calculus and probability theory (3 times)
 • Linear algebra and differential equations (2 times)
 • Multivariate calculus and optimization
- 2011 Co-taught special course in algebraic topology (with S. Patotski)
Belarusian State University, Minsk, Belarus

OTHER ACTIVITIES:

- Organized a reading group on stable envelopes, University of Edinburgh (2022)

- Refereed articles for Publications mathématiques de l’IHÉS, Compositio Mathematica, Communications in Mathematical Physics
- Supervised student project “Atiyah’s classification of vector bundles on an elliptic curve”, IST Austria (2020)
- Organized reading group “Number fields with given ramifications and automorphic forms”, Université Paris-Sud (2017)
- Member of jury at [TFJM²](#) (2017, 2018) and [ITYM](#) (2018)
- Member of selection committee and teaching assistant at [MoMISSS](#) summer school, Bremen, Germany (2013, 2017) and Lyon, France (2014)