Louis Ioos

Curriculum Vitae

CY Cergy University
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Research area

Fields of expertise

Differential, complex and symplectic geometry, global analysis on manifolds.

Themes

Geometric quantization, local index theory, spectral theory.

Objects studied

Bergman kernel, Toeplitz operators, semiclassical invariants.

Academic positions

Since Sept. 2022	**Tenure Track**, *CY Cergy University*, Cergy, France
apr. 2022– aug. 2022	**Humboldt post-doctoral fellow**, *Philipps-Universität Marburg*, Marburg, Germany
oct. 2021– mar. 2022	**Post-doctoral fellow**, *Max Planck Institute for Mathematics*, Bonn, Germany
2018–2021	**Post-doctoral fellow**, *Tel-Aviv University*, Tel-Aviv, Israel Advisors : Lev Buhovsky, Leonid Polterovich

Studies

31/05/2018	**PhD defense**, *Université Paris Diderot* Jury foreman : M. Jean-Michel Bismut, Jury members : M. Gilles Carron (referee), M. Eric Leitchnam, M. Xiaonan Ma (advisor), M. George Marinescu, M. Martin Schlichenmaier (referee).
2014–2018	**PhD in Mathematics**, *IMJ-PRG*, Paris, Advisor : Xiaonan Ma
2013–2014	**Master 2 in Fundamental Mathematics**, *UPMC*, Paris, Honors
2012–2013	**Master 2 in Mathematical Logic**, *Université Paris Diderot*, Paris, Honors
2009–2012	**Work abroad**, *Australia, Asia, America*
2008–2009	**Master 1 in Mathematics**, *Université de Versailles Saint-Quentin*, Versailles, Honors
2007–2008	**Maîtrise in Mathematics**, *Université de Montréal*, Montréal, scholar
2007	**Licence in Mathematics**, *Université de Versailles Saint-Quentin*, Versailles

Teaching

2nd semester 2018–2019	**Master 2 : Advanced topics in differential geometry**, *Assistant of L. Polterovich*, Tel Aviv University, 6 Lectures and Course preparation
1st semester 2017-2018	**Licence 2 : Suites, séries et intégrales**, *Assistant of A.Iordan*, Université Pierre et Marie Curie, 12 Exercise sessions
1st semester 2017-2018	**Licence 2 : Arithmétique pour informaticiens**, *Assistant of L. Koelblen*, Université Pierre et Marie Curie, 12 Exercise sessions
1st semester 2016-2017	**Licence 1 : Analyse et algèbre pour les sciences**, *Assistant of E. Falbel*, Université Pierre et Marie Curie, 12 Exercise sessions
1st semester 2016–2017	**Licence 2 : Fonctions de plusieurs variables et intégrales multiples**, *Assistant of P. Polo*, Université Pierre et Marie Curie, 12 Exercise sessions
2nd semester 2015–2016	**Licence 3 : Analyse fonctionnelle**, *Assistant of D. Cordero-Erausquin*, Université Pierre et Marie Curie, 12 Exercise sessions
1st semester 2015–2016	**Licence 3 : Probabilités élémentaires**, *Assistant of A. Lambert*, Université Pierre et Marie Curie, 12 Exercise sessions
2nd semester 2014–2015	**Licence 2 : Intégrales multiples**, *Lecturer*, Université Pierre et Marie Curie, 12 Lectures, 12 Exercise sessions and Course preparation
1st semester 2014-2015	**Licence 3 : Topologie et calcul différentiel**, *Assistant of P. Cherrier*, Université Pierre et Marie Curie, 12 Exercise sessions

Organisation of scientific events

nov. 2021– apr. 2022	**Alternative Geometry seminar**, *Max Planck Institute of Bonn*, with Okke van Garderen
15-19 nov. 2021	**Workshop on the semiclassical trace formula**, *Auffargis*, with Léo Bénard and Adrien Boulanger
2016–2017	**Workshop : Riemann surfaces and algebraic curves**, *Université Pierre et Marie Curie*, with Léo Bénard and Adrien Boulanger
2015–2016	**Workshop : Hilbert schemes**, *Université Pierre et Marie Curie*, with Nicolina Istrati
2014–2015	**Workshop : GAGA**, *Université Pierre et Marie Curie*, with Léo Bénard and Nicolina Istrati

Research funds raised

2014–2017	**Research Grant DIM RDM-IdF**, 5000 €
Since avr. 2022	**Funding from the Humboldt foundation**, 18000 €

Languages

French	**mother tongue**
English	**fluent**
German	**basic knowledge**

Talks

A. Talks in seminar

19/07/2022 **Institute Simion Stoilow, Bucarest**, *Geometry seminar*, Canonical Kähler metrics and quantization

05/07/2022 **Universität Göttingen**, *Oberseminar*, Quantization methods in the Yau-Tian-Donaldson program

11/03/2022 **UQAM, online**, *CIRGET seminar*, Quantization methods in the Yau-Tian-Donaldson program

22/02/2022 **Lisbon University, online**, *Geometria em Lisboa*, Berezin-Toeplitz quantization in the Yau-Tian-Donaldson program

13/01/2022 **Max Planck Institute of Bonn**, *Oberseminar*, Canonical Kähler metrics and quantization

06/12/2021 **WWU Münster**, *Oberseminar*, Quantum measurement theory over projective manifolds

08/12/2021 **Tel Aviv University, online**, *Geometry and Dynamics seminar*, Quantization in stages and canonical metrics

27/04/2021 **Philipps-Universität Marburg**, *Differentialgeometrie und Analysis*, Survey on the semiclassical expansion of the Bergman kernel II

20/04/2021 **Philipps-Universität Marburg**, *Differentialgeometrie und Analysis*, Survey on the semiclassical expansion of the Bergman kernel I

01/04/2021 **University de Toulouse**, *Complex geometry seminar*, Quantization of Kähler-Ricci solitons

22/03/2021 **Université Paris Sud, online**, *Harmonic Analysis seminar*, Donaldson's program for Kähler-Ricci solitons

24/11/2020 **Philipps-Universität Marburg, online**, *Differentialgeometrie und Analysis*, Bergman kernels in the Yau-Tian-Donaldson program

01/07/2020 **Université Paris Sud / UPMC, online**, *Analysis and Geometry seminar / Workshop on Dirac operators*, Applications of Berezin-Toeplitz quantization to Donaldson's program in Kähler geometry

13/05/2020 **Tel Aviv University, online**, *Geometry and Dynamics seminar*, Almost-representations of the Lie algebra of SU(2) and quantization of the sphere

08/01/2020 **Tel Aviv University**, *Geometry and Dynamics seminar*, Donaldson's iterations towards canonical Kähler metrics

23/05/2019 **University of Geneva**, *Topology and Geometry seminar*, La Conjecture Asymptotique de Witten pour les représentations quantiques du Mapping Class Group

06/03/2019 **Tel Aviv University**, *Geometry and Dynamics seminar*, Canonical Kähler metrics and quantization

09/01/2019 **Aarhus University**, *QGM seminar*, Geometric quantization of symplectic maps and Witten's asymptotic conjecture

31/10/2018 **Tel Aviv University**, *Geometry and Dynamics seminar*, Geometric quantization of Hamiltonian flows

15/05/2018 **Université Paris sud, Orsay**, *Harmonic analysis seminar*, Asymptotique des états isotropes en quantification holomorphe

20/03/2018	**University of Luxembourg**, *Working Group in Algebra, Geometry and Quantization*, Asymptotics of isotropic states in holomorphic quantization
09/01/2018	**Institut de Mathématiques de Marseille**, *Complex geometry seminar*, Asymptotique des états isotropes en quantification holomorphe
05/12/2017	**Universität zu Köln**, *Semi-classical analysis seminar*, Asymptotic expansion of isotropic states in holomorphic quantization
24/04/2015	**Université Pierre et Mare Curie, Paris**, *Workshop on Higgs bundles*, Théorie de Chern-Simons
04/03/2015	**Université Paris sud, Orsay**, *Workshop on Dirac operators*, Connexion de Hitchin et quantification géométrique

B. Talks in conferences

15-19 dec. 2019	**Academia Sinica, Taipei**, *2019 Taipei conference in complex geometry*, Canonical Kähler metrics and the spectral gap of the Berezin transform
09-13 sept. 2019	**NTHU, Taïwan**, *Geoquant 2019*, Geometric quantization of symplectic maps and semi-classical trace formulas
15-19 july 2019	**Universität zu Köln**, *Quantization in symplectic geometry*, An operational point of view on Berezin-Toeplitz quantization
08-12 oct. 2018	**CIRM, Luminy**, *International Workshop on Geometric Quantization and Applications*, Geometric quantization of symplectic maps and Witten's asymptotic conjecture
27-31 march 2017	**La Llagone, Matemale**, *Workshop on L^2-invariants*, Théorie de Hodge-de Rham, noyau de la chaleur

Research

A. Publications

1. **On the composition of Berezin-Toeplitz operators on symplectic manifolds**, *L. Ioos*, Math. Z. 290 (2018), no. 1-2, 539–559

2. **Berezin-Toeplitz quantization for eigenstates of the Bochner-Laplacian on symplectic manifolds**, *L. Ioos, W. Lu, X. Ma, G. Marinescu*, J. Geom. Anal. 30 (2020), no. 3, 2615–2646

3. **Geometric quantization of Hamiltonian flows and the Gutzwiller trace formula**, *L. Ioos*, Lett. Math. Phys. 110 (2020), 1585–1621

4. **Spectral aspects of the Berezin transform**, *L. Ioos, V. Kaminker, L. Polterovich, D. Shmoish*, Ann. Henri Lebesgue 3 (2020), 1343-1387

5. **Berezin-Toeplitz quantization and the least unsharpness principle**, *L. Ioos, D. Kazhdan, L. Polterovich*, Int. Math. Res. Not. IMRN 6 (2021), 4625–4656

6. **Quantization and isotropic submanifolds**, *L. Ioos*, Michigan Math. J., 71 (2022), no. 1, 177-220

7. **Geometric quantization of symplectic maps and Witten's asymptotic conjecture**, *L. Ioos*, Adv. Math. 387 (2021), 107840, 54 pp

8. **Balanced metrics for Kähler-Ricci solitons and quantized Futaki invariants**, *L. Ioos*, J. Funct. Anal. 282 (2022), no. 8, 109400, 58 pp

9. **Anticanonically balanced metrics on Fano manifolds**, *L. Ioos*, Ann. Global Anal. Geom. 62 (2022), doi:10.1007/s10455-022-09834-4, 32 pp

10. **Almost representations of algebras and quantization**, *L. Ioos, D. Kazhdan, L. Polterovich*, accepted in Amer. J. Math. (2022), 51 pp, arxiv.org/abs/2005.11693

B. Preprints

11. **Quantization of symplectic fibrations and canonical metrics**, *L. Ioos, L. Polterovich*, submitted for publication (2021), 51 pp, arxiv.org/abs/2112.00419