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## Academic Employment

- 2018–present **Chargé de Recherche**, CNRS, Université Paul Sabatier, Toulouse.  
2014–2017 **Simons Instructor**, Stony Brook University.

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## Education

- 2022 **Habilitation à Diriger des Recherches**, Université Paul Sabatier – Toulouse III.  
2010–2013 **PhD thesis in Complex Geometry**, under the supervision of Sébastien Boucksom and Mihai Păun, Université Paris VI, Institut de Mathématiques de Jussieu.  
2009–2010 **Master : Fundamental Mathematics**, Université Paris VI, with distinction "Très Bien".  
2009 **Admitted to the Agrégation**, rank 3.  
July 2007 **Admitted to the École Normale Supérieure de Paris**, rank 15.

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## Grants

- 2021–2025 **ANR JCJC Grant**, Project coordinator.  
Kähler manifolds with non-positive curvature : families and special subvarieties  
2015–2019 **NSF Geometric Analysis Grant DMS-1510214**, Principal Investigator.  
Singular Kähler-Einstein metrics : analytic and algebraic aspects  
2018 **CNRS Grant PEPS**.

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## Publications

- September 2021 **Numerical characterization of complex torus quotients (with B. Claudon and P. Graf)**, *Comment. Math. Helv.* 97, No.4, 769–799 (2022).  
eprint [arXiv:2109.06738](https://arxiv.org/abs/2109.06738)
- August 2021 **Degenerating Kähler-Einstein cones, locally symmetric spaces, and the Tian-Yau metric (with O. Biquard)**, *Invent. Math.* 230, 1101–1163 (2022).  
eprint [arXiv:2108.13318](https://arxiv.org/abs/2108.13318)
- February 2021 **Curvature formula for direct images of twisted relative canonical bundles endowed with a singular metric (with J. Cao and M. Păun)**, to appear in *Ann. Fac. Sci. Toulouse*.  
eprint [arXiv:2102.02744](https://arxiv.org/abs/2102.02744)
- December 2020 **Algebraic approximation and the decomposition theorem for Kähler Calabi-Yau varieties (with B. Bakker and C. Lehn)**, *Invent. Math.* 228, 1255–1308 (2022).  
eprint [arXiv:2012.00441](https://arxiv.org/abs/2012.00441)
- December 2020 **Continuity of singular Kähler-Einstein potentials (with V. Guedj and A. Zeriahi)**, *IMRN* 2023, No.2, 1355–1377 (2023).  
eprint [arXiv:2012.02018](https://arxiv.org/abs/2012.02018)
- August 2020 **Kähler spaces with zero first Chern class : Bochner principle, fundamental groups, and the Kodaira problem (with B. Claudon, P. Graf and P. Naumann)**, *J. Reine Angew. Math.* 786 (2022), 245–275.  
eprint [arXiv:2008.13008](https://arxiv.org/abs/2008.13008)
- March 2020 **Families of singular Kähler-Einstein metrics (with E. Di Nezza and V. Guedj)**, *J. Eur. Math. Soc.* 25 (2023), no.7, 2697–2762.  
eprint [arXiv:2003.08178](https://arxiv.org/abs/2003.08178)
- May 2019 **On subvarieties of singular quotients of bounded domains (with B. Cadorel and S. Diverio)**, to appear in *J. Lond. Math. Soc.*  
eprint [arXiv:1905.04212](https://arxiv.org/abs/1905.04212)
- August 2019 **Variation of singular Kähler-Einstein metrics : Kodaira dimension zero (with J. Cao and M. Păun, appendix by V. Tosatti)**, *J. Eur. Math. Soc.* 25, No.2, 633–679 (2023).  
eprint [arXiv:1908.08087](https://arxiv.org/abs/1908.08087)
- January 2019 **A Bochner principle and its applications to Fujiki class C manifolds with vanishing first Chern class (with I. Biswas and S. Dumitrescu)**, *Commun. Contemp. Math.* 22 (2020), no 6, 1950051, 21 pp.  
eprint [arXiv:1901.02656](https://arxiv.org/abs/1901.02656)

- August 2018 **Quasi-projective manifolds with negative holomorphic sectional curvature**, *Duke Math. J.* **171** (2), 417-442 (2022).  
eprint [arXiv:1808.01854](#)
- October 2017 **Variation of singular Kähler-Einstein metrics : positive Kodaira dimension (with J. Cao and M. Păun)**, *J. Reine Angew. Math.* **779**, 1-26 (2021).  
eprint [arXiv:1710.01825](#)
- April 2017 **A decomposition theorem for smoothable varieties with trivial canonical class (with S. Druel)**, *Journal de l'École polytechnique - Mathématiques* **5** (2018), p. 117-147.  
eprint [arXiv:1704.01800](#)
- April 2017 **Klt varieties with trivial canonical class - Holonomy, differential forms, and fundamental groups (with D. Greb and S. Kebekus)**, *Geom. Topol.* **23**, 2051-2124 (2019).  
eprint [arXiv:1704.01408](#)
- November 2016 **Orbifold stability and Miyaoka-Yau inequality for minimal models (with B. Taji)**, *Geom. Topol.* **26** 4, 1435-1482 (2022).  
eprint [arXiv:1611.05981](#)
- May 2016 **Families of conic Kähler-Einstein metrics**, *Math. Annalen* **376** (1), 1-37 (2020).  
eprint [arXiv:1605.04348](#)
- April 2015 **Kähler-Einstein metrics : from cones to cusps**, *J. Reine Angew. Math.* **759**, 1-27 (2020).  
eprint [arXiv:1504.01947](#)
- March 2015 **Kähler-Einstein metrics with conic singularities along self-intersecting divisors**, *Int. Math. Res. Not.* **2016**, No.15, 4634-4648.  
eprint [arXiv:1503.00326](#)
- February 2015 **Semi-stability of the tangent sheaf of singular varieties**, *Algebraic Geometry, Vol 3, No.5* (2016), 508-542.  
eprint [arXiv:1502.03711](#)
- October 2014 **On the boundary behavior of Kähler-Einstein metrics on log canonical pairs (with D. Wu)**, *Math. Annalen* **366** (1), 101-120 (2016).  
eprint [arXiv:1410.5366](#)
- July 2013 **Conic singularities metrics with prescribed Ricci curvature : the case of general cone angles along normal crossing divisors (with M. Păun)**, *J. Differential Geom.* **103**, no 1 (2016), 15-57.  
eprint [arXiv:1307.6375](#)
- April 2013 **Kähler-Einstein metrics on stable varieties and log canonical pairs (with R. Berman)**, *Geometric and Functional Analysis* **24** (6), 1683-1730 (2014).  
eprint [arXiv:1304.2087](#)
- December 2012 **Kähler-Einstein metrics with cone singularities on klt pairs**, *Int. J. Math.* **24** 1350035 (2013).  
eprint [arXiv:1212.1383](#)
- January 2012 **Kähler-Einstein metrics with mixed Poincaré and cone singularities along a normal crossing divisor**, *Annales de l'Institut Fourier* **64** (3), 1291-1330 (2014).  
eprint [arXiv:1201.0952](#)
- April 2011 **Metrics with cone singularities along normal crossing divisors and holomorphic tensor fields (with F. Campana et M. Păun)**, *Ann. Scient. Éc. Norm. Sup.* **46** (2013), 879-916.  
eprint [arXiv:1104.4879](#)
- November 2010 **Toric plurisubharmonic functions and analytic adjoint ideal sheaves**, *Math. Z.* **271** 1011-1035 (2012).  
eprint [arXiv:1011.3162](#)

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## Preprints

- October 2023 **Diameter of Kähler currents (with V. Guedj and A. Zeriahi)**.  
eprint [arXiv:2310.20482](#)
- June 2023 **Geometry of  $K$ -trivial Moishezon manifolds : decomposition theorem and holomorphic geometric structures (with I. Biswas, J. Cao and S. Dumitrescu)**, *submitted*.  
eprint [arXiv:2306.16729](#)
- May 2023 **Strict positivity of Kähler-Einstein currents (with V. Guedj and A. Zeriahi)**, *submitted*.  
eprint [arXiv:2305.12422](#)
- May 2023 **Equality in the Miyaoka-Yau inequality and uniformization of non-positively curved klt pairs (with B. Claudon and P. Graf)**, *submitted*.  
eprint [arXiv:2305.04074](#)

August 2020 **A decomposition theorem for  $\mathbb{Q}$ -Fano Kähler-Einstein varieties (with S. Druel and M. Păun)**, *submitted*.  
eprint [arXiv:2008.05352](https://arxiv.org/abs/2008.05352)

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## Visiting positions

Aug-Sep 2022 **SMRI (Sydney, Australia)**, *visiting Behrouz Taji*.

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## Selected talks

- November 2023 **Singular Kähler varieties with  $c_1 = 0$** , *Séminaire de Géométrie Algébrique*, IMJ-PRG, Paris.
- November 2023 **Kähler diameters**, *Séminaire d'Analyse et Géométrie*, IMJ-PRG, Paris.
- August 2023 **Uniformization of negatively curved klt pairs**, *Birational Geometry Seminar*, UCLA (online).
- August 2023 **Strict positivity for Kähler-Einstein currents**, *Conference Analytic Methods in Complex Geometry*, Universität Münster.
- May 2023 **Uniformization of non-positively curved klt pairs**, *Stability in Kähler Geometry*, Online conference "Geometry and TACOS".
- May 2023 **Degenerating conic Kähler-Einstein metrics**, *Geometry and Analysis Seminar*, Oxford University.
- December 2022 **Degenerating conic Kähler-Einstein metrics**, *Conference on Complex Analysis, Complex Geometry and Dynamics (in memory of Nessim Sibony)*, Université Paris Saclay.
- November 2022 **Degenerating conic Kähler-Einstein metrics**, *Séminaire d'Analyse et Géométrie*, IMJ-PRG, Paris.
- September 2022 **Varieties with trivial canonical class**, *Pure math seminar*, UNSW, Sydney.
- September 2022 **Mini-course on the invariance of plurigenera**, SMRI, Sydney.
- April 2022 **Compact Kähler manifolds with negative holomorphic sectional curvature**, *Differential Geometry Seminar*, Universität Münster.
- April 2022 **Degenerating Kähler-Einstein cones**, *Differential Geometry Seminar*, UC Berkeley, (online).
- March 2022 **Degenerating Kähler-Einstein cones**, *Geometry and Topology Seminar*, IISs, Bangalore, (online).
- March 2022 **Degenerating conic Kähler-Einstein metrics**, *Complex Geometry Seminar*, Universität Bayreuth.
- March 2022 **Numerical characterization of complex torus quotients**, *FOLIAGE Workshop*, Quimper.
- January 2022 **Applications of Kähler-Einstein metrics to complex geometry**, *Séminaire Quimpériodique*, Quimper.
- November 2021 **Numerical characterization of complex torus quotients**, *Séminaire Algèbre, Topologie et Géométrie*, LJAD, Nice.
- October 2021 **Numerical characterization of complex torus quotients**, *HODGEFUN Workshop*, Villa La Stella, Florence.
- September 2021 **Degenerating Kähler-Einstein cones**, *Informal Geometric Analysis Seminar*, UMD.
- June 2021 **A decomposition theorem for singular Calabi-Yau varieties**, *Algebraic Geometry in Angers*, Angers.
- March 2021 **Dégénérescence de métriques coniques**, *Séminaire de Géométrie Complexe*, IECL, Nancy (online).
- March 2021 **Un théorème de décomposition pour les variétés de Calabi-Yau singulières**, *Séminaire Géométrie Complexe*, I2M, Marseille (online).
- November 2020 **A decomposition theorem for  $\mathbb{Q}$ -Fano Kähler-Einstein varieties**, *Séminaire d'Analyse et Géométrie Complexes*, IMJ PRG, Paris (online).
- September 2020 **Applications of Kähler-Einstein metrics in algebraic geometry**, *Lectures at the online school of Laboratory of Algebraic Geometry*, HSE, Moscow, (virtual event).
- June 2020 **Variation of Kähler-Einstein metrics**, *Complex Geometry Seminar*, (online).
- May 2020 **Family of singular Kähler-Einstein metrics**, *Séminaire de Géométrie et Topologie*, UQAM, Montréal, (online).
- April 2020 **Klt varieties with trivial canonical class – Holonomy, differential forms, and fundamental groups II. Analytic aspects**, *Workshop on "Varieties with trivial canonical class"*, CIRM, Luminy, (virtual event).
- March 2020 **A Miyaoka-Yau inequality for minimal models**, *ALKAGE Workshop*, Institut Fourier, Grenoble.
- March 2020 **Convergence of the NKRF on general type varieties**, *GRACK Workshop "Kähler-Ricci flow and MMP"*, ENS Ulm, Paris.
- December 2019 **Families of Kähler-Einstein metrics**, *Conference "Geometry in Pairs"*, Palazzo Argiletum, Rome.

- July 2019 **Mini-course on varieties with trivial canonical class**, *Summer school "Foliations and Algebraic Geometry"*, Institut Fourier, Grenoble.
- May 2019 **Sous-variétés de variétés compactes kähleriennes à courbure holomorphe sectionnelle**, *Séminaire de Géométrie*, IMB, Bordeaux.
- April 2019 **Subvarieties of compact Kähler manifolds with negative holomorphic sectional curvature**, *Workshop on Higher Dimensional Complex Geometry*, University of Saarland, Saarbrücken.
- March 2019 **Subvarieties of compact Kähler manifolds with negative holomorphic sectional curvature**, *Oberseminar "Complex Manifolds"*, University of Bayreuth.
- February 2019 **A Bochner principle on singular varieties**, *Groupe de Travail Opérateurs de Dirac*, Université Paris XI, Orsay.
- December 2018 **Applications of singular Kähler-Einstein metrics to algebraic geometry**, *Algebraic Geometry Seminar*, Courant Institute, New York, NY.
- November 2018 **Variétés kähleriennes compactes à courbure holomorphe sectionnelle négative**, *Séminaire de Géométrie Analytique*, IRMAR, Rennes.
- November 2018 **Variétés kähleriennes compactes à courbure holomorphe sectionnelle négative**, *Séminaire Géométries*, ICJ, Lyon.
- November 2018 **Variétés kähleriennes compactes à courbure holomorphe sectionnelle négative**, *Séminaire de Géométrie Complexe*, CMI, Marseille.
- October 2018 **Subvarieties of compact Kähler manifolds with negative holomorphic sectional curvature**, Chinese Academy of Sciences, Beijing.
- October 2018 **Varieties with trivial first Chern class**, *Week long mini-course*, Sichuan University, Chengdu.
- July 2018 **Applications of singular Kähler-Einstein metrics to algebraic geometry**, *Algebra and Geometry Seminar*, Università La Sapienza, Roma 1.
- June 2018 **Singular varieties with trivial canonical class**, *Algebraic Geometry Seminar*, TU Chemnitz.
- June 2018 **Families of Ricci flat conic metrics**, *2nd Symposium in Geometry and Differential Equations*, ShanghaiTech University.
- April 2018 **Families of Ricci flat conic metrics**, *Conférence en Analyse et Géométrie complexe en l'honneur d'Ahmed Zeriahi*, Faculté des Sciences de Rabat.
- February 2017 **Variation of singular Kähler-Einstein metrics**, *Séminaire d'Analyse et Géométrie Complexes*, IMJ PRG, Paris.
- February 2017 **Variation of singular Kähler-Einstein metrics**, *Séminaire de Géométrie Complexe*, IMT, Toulouse.
- June 2017 **Miyaoka-Yau inequality for minimal models**, *Conference Current Developments and New Directions in Kähler Geometry*, Notre Dame University, South Bend, IL.
- May 2017 **Miyaoka-Yau inequality for minimal models**, *Research Seminar*, BCC CUNY, New York, NY.
- May 2017 **Singular varieties with trivial canonical class**, *Journées Complexes Lorraines*, IECL, Nancy.
- December 2016 **Singular varieties with trivial canonical class**, *Séminaire Algèbre et Géométrie*, Institut Fourier, Grenoble.
- November 2016 **Singular varieties with trivial canonical class**, *Special Seminar*, CMSA, Harvard University.
- September 2016 **Singular varieties with trivial canonical bundle**, *Algebraic Geometry Seminar*, UIC, Chicago, IL.
- August 2016  **$C^{2,\alpha}$  estimates for Kähler-Einstein cone metrics**, *Workshop on the complex Monge-Ampère equation*, AIM, San José, CA.
- December 2015 **Regularity of Kähler-Einstein cone metrics**, *Informal Complex Geometry Seminar*, Columbia University.
- November 2015 **Kähler-Einstein metrics on stable varieties**, *Program "Moduli spaces and singularities in Riemannian Geometry"*, Simons Center for Geometry and Physics, Stony Brook, NY.
- November 2015 **Kähler-Einstein metrics : from cones to cusps**, *Geometry and Topology Seminar*, UMD.
- February 2015 **Kähler-Einstein metrics : from cones to cusps**, *Differential Geometry and Geometric Analysis Seminar*, Princeton University.
- December 2014 **Conic Kähler-Einstein metrics**, *Groupe de Travail Opérateurs de Dirac*, Université Paris XI, Orsay.
- October 2014 **Kähler-Einstein metrics with cone singularities**, *Geometry and Topology Seminar*, Stony Brook University.
- June 2014 **Semistability of the tangent sheaf of singular varieties**, *Séminaire de Géométrie Algébrique*, IMJ, Paris.

- May 2014 **Semistability of the tangent sheaf of singular varieties**, *Conference on Positivity, Vanishing Theorems and Applications*, Laboratoire Paul Painlevé, Lille.
- April 2014 **Kähler-Einstein metrics on stable varieties**, *Workshop Complex Monge-Ampère equations on compact Kähler manifolds (MACK8)*, BIRS, Banff.
- June 2013 **Kähler-Einstein cone metrics on klt pairs**, *Workshop on Kähler Geometry*, Simons Center for Geometry and Physics, Stony Brook, NY.
- April 2013 **Kähler-Einstein metrics on varieties with log canonical singularities**, *1088th AMS Meeting, Special Session on Complex Geometry and Microlocal Analysis*, Boston College, Chestnut Hill, MA.
- March 2013 **Kähler-Einstein metrics on varieties with log canonical singularities**, KIAS, Seoul.
- September 2012 **Kähler-Einstein metrics with mixed cone and Poincaré singularities**, *Special Complex Analysis Seminar (KAAS)*, Chalmers, Göteborg.
- January 2012 **Kähler-Einstein metrics with cone singularities**, *Workshop KAWA3*, IMUB, Barcelone.
- March 2011 **Multiplier ideals : around Howald's theorem**, *Séminaire de Géométrie Algébrique*, IMJ, Paris.

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## Organization of scientific events

- June 2023 **Alpine meeting on nonpositive curvature in Kähler geometry**, *ANR KARMAPOLIS*, Centre Paul Langevin, Aussois.
- November 2021 **Workshop on singular uniformization theorems**, *ANR KARMAPOLIS*, Université Côte d'Azur, Nice.
- June 2021 **Analysis of Monge-Ampère, a tribute to Ahmed Zeriahi**, *International conference*, Université Paul Sabatier, Toulouse.
- June 2019 **Workshop on Geometric Analysis**, *part of the CIMI semester "Calculus of Variations and Probabilities"*, Université Paul Sabatier, Toulouse.
- April 2019 **Workshop on constant scalar curvature Kähler metrics**, Palazzone di Cortona.
- February 2019 **Conference Singular Metrics in Kähler Geometry**, *part of the thematic month "Complex Geometry"*, CIRM, Luminy.
- Fall 2015 **Program Moduli spaces and singularities in Riemannian Geometry**, Simons Center for Geometry and Physics, Stony Brook.

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## Teaching experiences

- Spring 2022 **Master course (M2)**, *Positive cones in Kähler geometry*, Université Paul Sabatier, Toulouse.
- Fall 2018 **Master course (M2)**, *Riemann Surfaces*, Université Paul Sabatier, Toulouse.
- 2014-2017 **Undergraduate classes**, *Calculus, Linear Algebra*, Stony Brook University.
- 2012-2014 **Exercise sessions for the course "Holomorphic functions of several complex variables and complex dynamics"** given by T-C Dinh, École Normale Supérieure, Paris.
- 2011-2014 **Mathematical courses for arts students**, École Normale Supérieure, Paris.
- 2008-2012 **Examiner in preparatory classes**, Lycée Louis le Grand, Paris.

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## Supervision

- 2023-2024 **Aryaman Patel (Postdoc)**, *One-year postdoc funded by the ANR Project Karmapolis*, Université Paul Sabatier, Toulouse.
- 2022- **Louis Dailly (PhD thesis)**, *Numerical characterization of quotients of the projective space*, joint supervision with B. Claudon, Université Rennes 1 et Université Paul Sabatier.
- 2020-2023 **Chung-Ming Pan (PhD thesis)**, *Families of canonical hermitian metrics*, joint supervision with V. Guedj, Université Paul Sabatier, Toulouse.
- Spring 2021 **Paul Chemineau (Master's thesis)**, *Multiplier ideal sheaves and Nadel vanishing theorem*, Université Paul Sabatier, Toulouse.
- Spring 2021 **Xia Xiao (Master's thesis)**, *Invariance of plurigenera*, Université Paul Sabatier, Toulouse.
- Spring 2020 **Pablo Montealegre (Master's thesis)**, *Analytic Geometry and Characterization of the Kähler cone*, Université Paul Sabatier, Toulouse.
- 2018-2019 **Benoît Cadorel (Postdoc)**, *One-year postdoc funded by the ANR Project Grack*, Université Paul Sabatier, Toulouse.
- Spring 2014 **Z. Qian (Master's thesis)**, *On the automorphism group of curves of genus  $g \geq 2$* , École Normale Supérieure, Paris.
- Spring 2013 **R. Côme & S. Douteau (Master's thesis)**, *The Lefschetz Theorem on hyperplane sections*, École Normale Supérieure, Paris.

Spring 2012 **K. Boucher & M. Galeotti (Master's thesis)**, *Yau-Schwarz Lemma and Hyperbolicity*, École Normale Supérieure, Paris.

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## Languages

French Mother Tongue  
English Fluent  
German Fluent

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## Miscellaneous

Journals Referee for *Advances, Algebraic Geometry, Ann. Inst. Fourier, Bull. LMS, Bull. SMF, Compositio, Crelle, Duke, Geometry and Topology, IMRN, JDG, JEMS, J. Geom. An., Math Ann., Math Z, MRL, Panoramas et Synthèse, etc.*

Responsibility Co-organizer of the Complex Geometry Seminar at the IMT, Toulouse (2018-present)  
Member of hiring committees (Université de Lorraine 2019, Université Côte d'Azur 2020, Sorbonne Université 2022, Université d'Angers 2023)  
Referee for a PhD thesis : Lukas Engberg (Aarhus, 2022)  
Member of PhD defense committees : Mingchen Xia (Chalmers, 2022)