

# Duc Viet Vu

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## 1 Employment

01.04.2021-: Professor W<sub>2</sub> with tenure-track to W<sub>3</sub>, Department of Mathematics and Computer Science, University of Cologne.

2018- 2021 : Postdoc, Department of Mathematics and Computer Science, University of Cologne, Germany (*Fellowship of Alexander von Humboldt foundation*).

2017-2018: Research fellow, Korea Institute for Advanced Study (KIAS), Seoul.

2016-2017: Teaching and research assistant (ATER), Université Pierre et Marie Curie, Paris.

2010-2012: Teaching assistant, Hanoi National University of Education, Hanoi.

## 2 Education

Ph.D., Mathematics, 2013-2017, Université Pierre et Marie Curie, Paris (*Fellowship DIM of Region Il-de-France*)  
under the supervision of Tien-Cuong Dinh  
PhD thesis: *Pluripotential theory and equidistribution problems*.

M.S., Pure Mathematics, 2013, Université Pierre et Marie Curie, Paris (*Master scholarship of Fondation Sciences Mathématiques de Paris*)  
under the supervision of Tien-Cuong Dinh  
Master thesis: *Entropy and eigenfunctions*.

B.S., Mathematics, 2010, Hanoi National University of Education, Hanoi, Vietnam.

## 3 Research grants

- Member of the ANR-DFG project QuaSiDy “*Quantization, singularity and holomorphic dynamics*”.
- Associated member in the SFB project (CRC/TRR 191) “*Symplectic Structures in Geometry, Algebra and Dynamics*”.
- *New perspectives in complex geometry and dynamics* (03.2019-12.2019) funded by Université de Lille together with Fabrizio Bianchi, Viet-Anh Nguyễn (Lille) and George Marinescu (Cologne).
- *Pluripotential theory and applications* (08.2017-08.2018) at KIAS.
- *Postdoctoral fellowship* of the Alexander von Humboldt foundation (05.2018-04.2021).
- *Young talent grant* of the Chinese Academy of Sciences (declined).

## 4 Scientific work

### 4.1 Published or accepted papers

1. *Asymptotic number of scattering resonances for generic Schrödinger operators* (with Tien-Cuong Dinh), *Comm. Math. Phys.* 326, no. 1, 185-208, 2014.
2. *Intersection of positive closed currents of higher bidegree*, *Michigan Math. J.* 65, no. 1, 863-872, 2018.
3. *Equidistribution rate for Fekete points on some real manifolds*, *Amer. J. Math.* 140, no. 5, 1311-1355, 2018.
4. *Complex Monge-Ampère equation for measures supported by real submanifolds*, *Math. Ann.* 372, no. 1-2, 321-367, 2018.
5. *Entire holomorphic curves into projective spaces intersecting a generic hypersurface of high degree* (with Dinh Tuan Huynh and Song-Yan Xie), *Ann. Inst. Fourier (Grenoble)* 69 (2019), no. 2, 653-671.
6. *Large deviation theorem for random covariance matrices* (with Tien-Cuong Dinh), *Michigan Math. J.* 68 (2019), no. 3, 597-620.
7. *Holomorphic mappings into compact complex manifolds* (with Duc Thai Do), *Houston J. of. Math.* 43, no. 3, 725-762, 2017.
8. *Families of Monge-Ampère measures with Holder continuous potentials*, *Proc. Amer. Math. Soc.* 146, no. 10, 4275-4282, 2018.
9. *Super-potentials, densities of currents and number of periodic points for holomorphic maps* (with Tien-Cuong Dinh and Viêt-Anh Nguyễn), *Adv. Math.* 331, 874-907, 2018.
10. *Locally pluripolar sets are pluripolar*, *Internat. J. Math.* 30 (2019), no. 13.
11. *Densities and intersection of  $(1,1)$ -currents* (with Lucas Kaufmann), *J. Funct. Anal.* 277 (2019), no. 2, 392-417.
12. *Algebraic flows in commutative complex Lie groups* (with Tien-Cuong Dinh), *Comment. Math. Helv.* 95 (2020), no. 3, 421-460.
13. *Equilibrium measures of meromorphic self-maps on non-Kähler manifolds*, *Trans. Amer. Math. Soc.* 373 (2020), no. 3, 2229-2250. published version.
14. *Densities of currents on non-Kähler manifolds*, *Int. Math. Res. Not. IMRN* 2021, no. 17, 13282-13304.
15. *On the set of divisors with zero geometric defects* (with Dinh Tuan Huynh), *J. reine angew. Math.* 771 (2021), 193-213.
16. *Exotic periodic points*, 2020, *Commun. Contemp. Math.*, doi/10.1142/S0219199721500292.
17. *Density currents and relative non-pluripolar products*, *Bull. Lond. Math. Soc.* 53 (2021), no. 2, 548-559.
18. *Intersection of  $(1,1)$ -currents and the domain of definition of the Monge-Ampère operator* (with Dinh Tuan Huynh and Lucas Kaufmann), arxiv:2003.12501, 13 pages, 2020, to appear in *Indiana Univ. Math. J.*
19. *Relative non-pluripolar products of currents*, *Ann. Global Anal. Geom.* 60 (2021), no. 2, 269-311.
20. *Complex Monge-Ampère equations with solutions in finite energy classes* (with Do Duc Thai), arxiv:2010.08619, 15 pages, 2020, to appear in *Math. Res. Lett.*
21. *Moser-Trudinger inequalities and Monge-Ampère equations* (with Tien-Cuong Dinh and George Marinescu), arxiv:2006.07979, 22 pages, 2020, to appear in *Ann. Sc. Norm. Super. Pisa Cl. Sci.* (5).

## 4.2 Preprints

1. *Densities of currents on non-Kähler manifolds and complex dynamics*, arxiv:1902.00666, 32 pages, 2019.
2. *Convexity of the class of currents with finite relative energy*, arxiv:2005.13241, 10 pages, 2020.
3. *Lelong numbers of currents of full mass intersection*, arxiv:2008.09219, 23 pages, 2020.
4. *Loss of mass of non-pluripolar products*, arxiv:2101.05483, 19 pages, 2020.
5. *Higher Lelong numbers versus full Monge-Ampère mass* (with Do Duc Thai), arxiv:2104.05434, 2021.

## 5 Talks

### 5.1 Conference/Workshop talks

- Complex Geometry, Dynamical Systems and Foliation Theory, CIRM, Marseille, 2022 (upcoming).
- Dynamical systems and systems of equations, Centro De Giorgi, Pisa, 2022 (upcoming).
- Selected topics in complex analysis and geometry, in celebration of anniversaries of Professors Le Mau Hai and Do Duc Thai, Hanoi, Vietnam, 2021.
- Dynamics, SCV and CR geometry, Nice, 2021.
- Interaction of complex geometry and CR geometry, Cologne, 2021.
- Workshop on the standard conjectures, (Weil's) Riemann hypothesis, and relations to dynamical systems, Oslo, Norway, 2021.
- CR and complex geometries and dynamics, Nice, France, 2021.
- Complex dynamics conference, CIRM, Marseille, France, 2020.
- Summer school on complex analysis and applications, Hanoi, 2019 (mini-course on pluripotential theory).
- Joint seminar on complex algebraic geometry and complex analysis, Wuppertal, Germany, 2019.
- A Dynamics day, Nice, 2018.
- Mapping problems and complex manifolds in projective spaces, Oslo, Norway, 2018.
- Fatou Meeting, Dijon, France, 2018 (a min-course in the theory of densities of currents).
- KSCV Conference, Daegu, South Korea, 2017.
- Meeting of young researchers in complex dynamics, Rennes, France, 2016.
- Analysis and geometry of resonances conference, CIRM, Luminy, France, 2015.

## 5.2 Seminar talkss

Several complex variables, IBS, Daejeon, South Korea, 2022 (upcoming).

Analyse complexe et Equations differentielles, Lille, 2021.

Informal Geometric Analysis, University of Maryland, 2021.

Random geometry seminar, Cologne, 2021.

Complex Analysis, Rutgers-New Brunswick, 2021.

Systemes dynamiques et geometrie, Angers, 2021.

Complex geometry, Nancy, 2021.

Dynamique, Paris 13, Paris, France, 2021.

Dynamical systems and Probability seminar, Amiens, France, 2020.

Colloquium talks, AMSS, Beijing, 2019.

Dynamical systems seminar, IMT, Toulouse, France, 2019.

Complex analysis and differential equations seminar, Lille, France, 2019.

Dynamical system and Probability seminar, Amiens, France, 2018.

Semi-classical seminar, Cologne, Germany, 2018.

Topology and geometry seminar, National University of Singapore, Singapore, 2017.

Several complex variables seminar, KIAS, Seoul, 2017.

Analyse complex and EDP seminar, Lille, France, 2017.

Vietnamese meeting of Mathematics in Singapore, 2017.

Phd students Seminar, Institut de Mathématiques de Jussieu, Paris, 2015.

## 6 Teaching

### 6.1 Lectures

1. A mini-course on the theory of densities of currents for experts in complex dynamics given at the meeting ANR Fatou, Dijon, France, 2018.
2. A master mini-course on the pluripotential theory, Hanoi, Vietnam, 2019.
3. An introduction to pluripotential theory (Summer Semester 2021), Cologne.
4. Complex Dynamics (Winter Semester 2021/2022), Cologne.

## 6.2 Exercise sessions

At Université Pierre et Marie Curie, France:

1. Analysis and Algebra for sciences- 1M001 (2016-2107).
2. Integration - 3M263 (2015-2016).
3. Vector calculus and multiple integration- 2M256 (2014-2015).
4. Introduction to semi-classical analysis (Master course, M2) (2014-2015).
5. Integrals, sequences and linear algebra- 1M002 (2014-2015 and 2013-2014).

At Hanoi National University of Education, Vietnam:

1. Linear algebra (2010-2011, 2011-2012).
2. Analytic geometry (2011-2012).

## 7 Scientific visits

Laboratoire Paul Painlevé, University of Lille, 10/2021.

Department of Mathematics, National University of Singapore, 11/2017.

Department of Mathematics, National University of Singapore, 4/2017.

## 8 Languages

English (good), French (good), German (intermediate), Vietnamese (native).

## 9 Other activities

I organize with George Marinescu a workshop on *interactions of complex geometry and Cauchy-Riemann geometry* in Cologne, 2021.

I am one of organizers of a summer school on *complex analysis and applications* held in Hanoi, 2019.

Referee for Crelle's journal, Indiana J. Math, Math. Z, Proc. London. Math. Soc., J. Geom. Anal., etc.

Review for Zentralblatt MATH and MathSciNet.