Huu Phuoc **LE**

LIP6 - Sorbonne Université, 4 place Jussieu, 75005 Paris, France

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Education

Sorbonne University - LIP6 — *Paris, France*

Temporary Research and Teaching Assistant — *Sep. 2021 - Sep. 2022*

Sorbonne University - LIP6 — *Paris, France*

PhD in Computer Sciences — *Oct. 2018 - Dec. 2021*

- [https://www-polsys.lip6.fr/ phuoc/thesis.pdf]
- Advisor: Prof. M. Safey El Din

Paris Saclay University - University of Versailles Saint-Quentin-en-Yvelines — *Versailles, France*

Master 2 with highest honor - Applied Algebra in Computer Algebra and Cryptography — *Sep. 2017 - Sep. 2018*

- Sophie Germain Scholarship - FMJH

Ecole Polytechnique — *Palaiseau, France*

Engineer's degree - Majored in Mathematics and Computer Science — *Sep. 2014 - Sep. 2018*

- Eiffel Scholarship - Campus France

Hanoi University of Sciences — *Hanoi, Vietnam*

Honored Program for Mathematics - Bachelor of Sciences — *Sep. 2011 - Jun. 2014*

- Scholarship of Vietnam Institute for Advanced Studies in Mathematics

Le Quy Don High School for Gifted Students — *Danang, Vietnam*

Baccalaureate with highest honor - Majored in Mathematics — *Sep. 2008 - Jun. 2011*

Researches

Themes: symbolic computation; polynomial system solving; algorithms in real algebraic geometry

Publications in journals with peer review

2021 **Solving parametric systems of polynomial equations over the reals through Hermite matrices**
Joint-work with M. Safey El Din, *Journal of Symbolic Computation*
[sciencedirect.com/science/article/pii/S0747717121000833] - [hal.archives-ouvertes.fr/hal-03029441]

2021 **Computing totally real hyperplane sections and linear series on algebraic curves**
Joint-work with D. Manevich and D. Plaumann, *Le Matematiche*
[hal.archives-ouvertes.fr/hal-03283378]

Publications in proceedings of conferences with peer-review

2021 **Faster One Block Quantifier Elimination for Regular Polynomial Systems of Equations**
Joint-work with M. Safey El Din, *ISSAC '21*
[dl.acm.org/doi/10.1145/3452143.3465546] - [hal.archives-ouvertes.fr/hal-03180730]

2020 **Computing the Real Isolated Points for an Algebraic Hypersurface**
Joint-work with M. Safey El Din and T. de Wolff, *ISSAC '20*
[dl.acm.org/doi/10.1145/3373207.3404049] - [hal.archives-ouvertes.fr/hal-02920059]

2017 **Fast Genetic Algorithms**
Joint-work with B. Doerr, R. Makhmara and T.D. Nguyen, *GECCO '17*
Best paper award in Genetic Algorithm Track
[dl.acm.org/doi/10.1145/3071178.3071301] - [arxiv.org/abs/1703.03334]

Submissions & Papers in preparation

2022 **Finer complexity estimates for the change of ordering of Gröbner bases for generic symmetric determinantal ideals**
Joint-work with A. Ferguson, *Submitted to ISSAC '22*
[hal.archives-ouvertes.fr/hal-03573833/]

2022 **Faster algorithm for computing the real isolated points of an algebraic hypersurface**
[hal.archives-ouvertes.fr/hal-03590187], *Submitted to Journal of Symbolic Computation*

Talks at conferences

Determinantal structures, Gröbner bases and parametric polynomial systems — *CIRM, Luminy, France*
JNCF 2022 — *Mar. 2022*

On Solving Parametric Polynomial Systems over the Reals — *Invited - Online*
SIAM AG 2021 — *Aug. 2021*

Faster one block quantifier elimination for regular polynomial systems of equations — *Online*
ISSAC 2021 — *Jul. 2021*

Calcul rapide de la projection des ensembles algébriques réelles (in French) — *Online*
French Computer Algebra National Days 2021 — *Mar. 2021*

Computing real isolated points for an algebraic hypersurface — *Online*
ISSAC 2020 — *Jul. 2020*

Invited seminars

One block quantifier elimination over the reals: algorithms, complexity and applications — *Online*
Seminar of AROMATH Team - Sophia Antipolis INRIA — *Mar. 2022*

One block quantifier elimination over the reals: algorithms, complexity and applications — *ENS Lyon*
Seminar of ARIC Team - LIP - ENS Lyon — *Dec. 2021*

One block quantifier elimination over the reals: algorithms, complexity and applications — *Online*
Seminar of Symbolic Computation Team - XLIM — *Sep. 2021*

Fast algorithm and sharp degree bounds for one block quantifier elimination over the reals — *Online*
Seminar of MAX Team - LIX — *Mar. 2021*

Experience

Laboratoire d'informatique de Paris 6 (LIP6) — *Paris, France*
Research internship: Real root classification: algorithms and applications — *Mar. 2018 - Sep. 2018*

- Supervisors: J.-C. Faugère and M. Safey El Din
- Study, implement and analyze the state-of-the-art algorithms for real root classification
- Identify possible improvements and design a new algorithm to tackle the target application

Institut de recherche mathématique de Rennes (IRMAR) — *Rennes, France*
Research internship: Floating-point arithmetic of p-adic numbers — *Apr. 2017 - Aug. 2017*

- Supervisor: X. Caruso
- Research on floating-point method for representing p-adic numbers on computer

Laboratoire d'informatique de l'Ecole polytechnique (LIX) — *Palaiseau, France*
Scientific project: Revolutionary algorithms — *Oct. 2016 - Feb. 2017*

- Supervisor: B. Doerr
- Analyze the complexity of genentic algorithms and design a new efficient algorithms
- Paper accepted by GECCO 2017 and won best paper award for Genetic algorithm track

Ecole Polytechnique - Atos Enterprise — *Bezons, France*
Scientific project: Prototype a micro-server for Big Data — *Nov. 2015 - Mar. 2016*

- Research on Big Data application of FPGAs
- Implement machine learning algorithms using OpenCL and compare FPGA's performance to GPU

Other scientific activities

Co-organizer of PolSys-Specfun seminar (2020-2021) web-page: [PolSys] - [SpecFun]
with A. Bostan, F. Chyzak et M. Safey El Din

Reviewer for research papers

- ISSAC conference: 1 paper
- CASC conference: 1 paper
- Mathematics of Computation: 1 paper
- Journal of Symbolic Computation: 1 paper

Coding projects

ParamHermite: solving parametric polynomial systems through Hermite matrices — Maple code
IsolatedPoints: computing real isolated solutions of a multivariate polynomial — Maple code
Create stippling images by Poisson disk sampling and optimization on the space of measures — Python code
Integer factorization using class-group method — C code
Integer factorization using elliptic curve method (ECM) — Python + C code

Teaching activities

Teach exercise classes; Write several subjects and corrections of exercises and tests; Survey and correct exams

Teaching & Research Assistant *192h*
Department of Computer Sciences - Sorbonne University *Sep. 2021 - Sep. 2022*
PhD student with teaching duties *192h*
Department of Computer Sciences - Sorbonne University *Sep. 2018 - Sep. 2021*

Year	Teaching unit	Level	TD	TP
2021-2022	Introduction to programming 2 (with C language)	L1	38.5h	-
	Algorithms	L2	38.5h	-
	Introduction to Object Oriented programming (with Java)	L2	38.5h	-
	Introduction to cryptography	M1	10h	10h
	Numerical and Symbolic Algorithms Modeling	M1	20h	20h
2020-2021	Discrete mathematics	L2	-	10.5h
	Numerical and Symbolic Algorithms Modeling	M1	15h	20h
2019-2020	Introduction to programming 2 (with C language)	L1	38.5h	-
	Numerical and Symbolic Algorithms Modeling	M1	8h	20h
2018-2019	Introduction to programming 2 (with C language)	L1	38.5h	-
	Introduction to relational database (with SQL)	L2	38h	-

Distinctions

2011 **Bronze Medal**, International Mathematical Olympiad 2011 — *Amsterdam, Netherlands*
2011 **Second Prize**, Vietnam National Mathematical Olympiad — *Hanoi, Vietnam*
2010 **Silver Medal**, Southern Regional Vietnam Mathematical Olympiad — *Ho Chi Minh City, Vietnam*

Skills & Languages

Languages Vietnamese (native), English (**C1** IELTS), French (**C1** TCF)
Programming Java, C, C++, Python
Computer Algebra SageMath, Maple
Others Unix shell, LaTeX, Git, Ruby on Rails, SQL, HTML, JavaScript