

Guilhem Repetto

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Master d’informatique
ENS Rennes · IP Paris

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FORMATION

Institut Polytechnique de Paris (IP Paris)	2024 – 2025
<i>Master 2 – Cyber Physical Systems</i>	Paris
École Normale supérieure (ENS) de Rennes	2022 – 2023
<i>Master 1 de science informatique, licence de mathématiques</i>	Rennes
Classe préparatoire MPSI – MP	2019 – 2022
<i>Lycée Joffre</i>	Montpellier

PROJETS DE RECHERCHE

Zero-Knowledge Proofs and Multi-Party Computation	2025
<i>Encadré par I. Visconti</i>	Sapienza University , Rome, Italie
Analyse topologique de réseaux de neurones	2025
<i>Encadré par E. Goubault & S. Putot</i>	École Polytechnique , Palaiseau
Preuves à divulgation nulle de connaissances	2024
<i>Encadré par F. Koushanfar, G. De Micheli & N. Sheybani</i>	University of California San Diego , USA
Synthèse d’arbres d’attaques	2023 – 2024
<i>Encadré par S. Pinchinat & D. Vojtisek</i>	IRISA , Rennes
Étude des distributions du problème LWE	2023
<i>Encadré par A. Roux-Langlois & M. Dien</i>	GREYC , Caen

PUBLICATIONS

Vulgarisation : *Autour du théorème de Cantor*, à paraître dans [Quadrature](#)

Livre : co-auteur d’un recueil de problèmes mathématiques à destination des lycéens intitulé [Problèmes originaux pour l’éveil d’une curiosité mathématique](#), éditions Ellipses, juin 2024.

LOGICIELS, PROGRAMMATION

Python, OCaml, Rust, Julia, C, Linux, Git

LANGUES

Anglais : niveau C1, environ 6 mois passés dans des pays anglophones
Chinois mandarin : notions

CENTRES D’INTÉRÊTS

Musique : CEM de percussions du conservatoire de Montpellier. Quatre sessions avec le *Cambridge Heidelberg Montpellier Youth Orchestra*. Orchestres universitaires.

Sport : parachutisme sportif (≈ 65 sauts), semi-marathons

Computer Science

Introduction to algorithms [ALGO1] <i>Graphs, data structures, flows, complexity</i>	F. Schwarzentruher
Advanced algorithms [ALGO2] <i>Study of the NP and co-NP classes, approximation and random algorithms</i>	F. Schwarzentruher
Introduction to cryptography [CRYPTO] <i>Basis of cryptography, levels of security, post-quantum encryption</i>	A. Roux-Langlois
Logic [FOND2] <i>Logic for informatics, proof systems, skolemisation, compactness</i>	D. Baelde
Theory of languages and computability [FOND1] <i>Formal languages, automata and Turing machines</i>	G. Lesventes
Signal processing [TS] <i>Fourier transform, sparse representation</i>	N. Keriven, C. Elvira
Image processing [TRIMG] <i>Pattern search, reconstruction, sparsity</i>	E. Carruyer
Architecture and system [ARCSYS1] <i>Programming in C, introduction to networks</i>	R. Hutin
Programming in OCaml [PROG1] <i>Concepts of functional programming, applications in OCaml</i>	D. Baelde
Programming in C++ [PROG2] <i>Object oriented programming, project</i>	M. Quinson

Mathematics

Algebra and cryptography [MAG1] <i>Finite fields, error correcting codes, elliptic curves</i>	F. Ulmer
Group theory [THGR] <i>Classification of finite order abelian groups, Sylow theorems, simplicity, semi-direct products</i>	T. Schmidt
Rings and arithmetics [ANAR] <i>Principal and factorial rings, formal series, fractions, quotient and localisation</i>	D. Bourqui
Optimisation [MAG1] <i>Extrema on varieties, Lagrange multipliers, Karush-Kuhn-Tucker theorem</i>	B. Huguet
Statistics and probability [MATH2] <i>Estimators, central limit theorem, random walks</i>	F. Schwarzentruher
Lebesgue integration [MATH1] <i>Construction of the Lebesgue integral, introduction to measure theory</i>	R. Carles
General topology [TOPG] <i>Introduction to topology</i>	Z. Ammari
Differential calculus [CD] <i>Infinite dimension, partial differentials, extrema</i>	K. Beauchard
Normed vector spaces [EVN] <i>Ascoli theorem, Hilbert spaces, Fourier series, Baire theorem</i>	J. Sabin

ENS RENNES – MASTER 1 IN COMPUTER SCIENCE

Information theory [TI]	É. Fabre
<i>Introduction to compression, entropy, correction</i>	
Semantics and proof assistants [SEM]	S. Blazy
<i>Programming in Rocq</i>	
Complexity theory [THX]	F. Schwarzentruher
<i>PSPACE, EXPTIME, alternating machines, polynomial hierarchy, undecidability</i>	
Machine learning [ML]	E. Kijak, R. Gaudel
<i>Binaires decision trees, reinforcement learning, neural networks</i>	
Compilation [GCC]	S. Rokicki
<i>General compilation concepts</i>	

IP PARIS – MASTER 2 IN CYBER-PHYSICAL SYSTEMS

Introduction to the verification of neural networks [CSC_54441_EP]	S. Putot
<i>Explainability, fairness, formal methods approaches for verification of neural networks</i>	
Decision Procedures for Artificial Intelligence [CSC_54656_EP]	A. Chapoutot
<i>Task planning, SMT techniques, CDCL algorithms and classical constraint programming</i>	
Modeling and analysis of security risks in complex systems [CSC_55103_TP]	J. Leneutre
<i>Modeling of information security, threat modeling, quantitative methods for risk management</i>	
Navigation for Autonomous Systems [CSC_54456_EP]	D. Filliat
<i>Navigation, obstacle avoidance, localization, mapping, filtering and optimization techniques</i>	
Numerical methods for dynamical systems [CSC_53656_EP]	J.-A. dit Sandretto
<i>Safe numerical simulation methods, resolution of differential equations</i>	
Embedded Critical Real-Time Systems (STREC), part 1 [CSC_55E01_TP]	L. Pautet
<i>Real-time System Scheduling, mono and multiprocessor systems</i>	
Embedded Critical Real-Time Systems (STREC), part 2 [CSC_55E02_TP]	D. Blouin
<i>Code generation, temporal logics</i>	
Introduction to Control Theory [APM_4AUT2_TA]	E. Vanneaux
<i>Linear, PID and MPC controllers, controllability and observability</i>	
Introduction to Cryptology [CSC_51058_EP]	F. Morain
<i>Cryptanalysis, discrete logarithm, asymmetrical cryptography, signature, real life protocols</i>	
Advanced Cryptology [CSC_52068_EP]	B. Smith
<i>Elliptic curves, lattices, side-channel attacks, post-quantum cryptography</i>	

COLLÈGE DE FRANCE

Introduction to complexity classes	Sir T. Gowers
<i>PSPACE, EXPTIME, alternating machines, polynomial hierarchy, undecidability</i>	