Gabrielle De Micheli

Personal Information

- Date and place of birth: 11th February 1993, Palo Alto, CA, USA
- Citizenship: Swiss, French, Italian, American
- Current position: Postdoctoral scholar at University of California, San Diego (UCSD)
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Education

May 2021	**PhD in Computer Science**, *University of Lorraine*, Nancy, France. Advisors: Pierrick Gaudry, Cécile Pierrot
May 2018	**Masters in Computer Science**, *University of Pennsylvania*, Philadelphia, USA.
Oct 2016	**Masters in Mathematics**, *EPFL, Swiss Institute of Technology*, Lausanne, Switzerland.
July 2014	**Bachelor in Mathematics**, *EPFL, Swiss Institute of Technology*, Lausanne, Switzerland.

Academic distinctions

October 2022	**Finalist**, *ERCIM Cor Baayen Young Researcher Award*, Nominated by Inria.
January 2022	**Prix de thèse Gilles Kahn 2021**, *from Société Informatique de France (SIF) for an excellent thesis in Computer Science*.
December 2021	**Best paper award**, *Asiacrypt 2021*, for *Lattice Enumeration for Tower NFS: a 521-bit Discrete Logarithm Computation*.
October 2021	**Young Talent for Women in Science prize 2021**, *from the Foundation l'Oréal-UNESCO*.
September 2021	**Early Postdoc.Mobility Fellowship**, *from the Swiss National Science Foundation*.

Publications

De Micheli, Gaudry, Pierrot	**Lattice Enumeration for Tower NFS: a 521-bit Discrete Logarithm Computation**, *Asiacrypt*, published in Advances in Cryptology – Asiacrypt, 2021.
De Micheli, Gaudry, Pierrot	**Asymptotic complexities of discrete logarithm algorithms in pairing-relevant finite fields**, *Crypto*, published in Advances in Cryptology - Crypto, 2020.
De Micheli, Piau, Pierrot	**A Tale of Three Signatures: practical attack of ECDSA with wNAF**, *Africacrypt*, published in Progress in Cryptology - Africacrypt, 2020.
De Micheli, Shani, Heninger	**Characterizing Overstretched NTRU Attacks**, *Mathcrypt*, published in Journal of Mathematical Cryptology, 2018.
Dall, De Micheli, Eisenbarth, Genkin, Heninger, Moghimi, Yarom	**CacheQuote: Efficiently Recovering Long-term Secrets of SGX EPID via Cache Attacks**, *CHES*, published in IACR Trans. Cryptogr. Hardw. Embed. Syst (2), 2018.

Unpublished work

De Micheli, **Recovering cryptographic keys from partial information, by example**, *Cryptology*
Heninger *ePrint Archive: Report 2020/1506*, 2021.

Invited talks and presentations

October 2022 **Faster amortized FHEW bootstrapping**, *Intel Frontier Workshop*, Portland, USA.

June 2022 **Cryptanalyses de logarithmes discrets (in French)**, *Journées nationales du GDR Sécurité Informatique*, Paris, France.

April 2022 **Énumération de réseaux pour Tower NFS : un calcul de logarithme discret de 521 bits (in French)**, *ECO seminar*, Montpellier, France.

April 2022 **Discrete logarithm cryptanalysis**, *Stanford University*, Palo Alto, USA.

March 2022 **Lattice Enumeration for Tower NFS: a 521-bit Discrete Logarithm Computation**, *AWM seminar*, UC San Diego, USA.

February 2022 **Lattice Enumeration for Tower NFS: a 521-bit Discrete Logarithm Computation**, *Number Theory seminar*, UC San Diego, USA.

December 2021 **Lattice Enumeration for Tower NFS: a 521-bit Discrete Logarithm Computation**, *Asiacrypt 2021*, Virtual conference.

November 2021 **Lattice Enumeration for Tower NFS: a 521-bit Discrete Logarithm Computation**, *Theory seminar*, UC San Diego, USA.

October 2021 **Key recovery from partial information**, *Cryptography seminar*, Rennes, France.

November 2020 **Discrete logarithm algorithms in pairing-relevant finite fields**, *Journées Codage et Cryptographie C2 2020*, Virtual conference.

August 2020 **Discrete logarithm algorithms in pairing-relevant finite fields**, *Crypto 2020*, Virtual conference.

July 2020 **A Tale of Three Signatures: practical attack of ECDSA with wNAF**, *Africacrypt 2020*, Virtual conference.

February 2020 **Pairings and security of the discret logarithm problem in finite fields**, *Security seminar*, Boston University, Boston, USA.

February 2020 **Pairings and security of the discret logarithm problem in finite fields**, *Theory seminar*, University of Northeastern, Boston, USA.

Decembre 2019 **A Tale of Three Signatures: practical attack of ECDSA with wNAF**, *IMA International Conference on Cryptography and Coding*, Oxford, UK.

September 2018 **CacheQuote: Efficiently Recovering Long-term Secrets of SGX EPID via Cache Attacks**, *Conference on Cryptographic Hardware and Embedded Systems (CHES) 2018*, Amsterdam, Netherlands.

September 2018 **CacheQuote: Efficiently Recovering Long-term Secrets of SGX EPID via Cache Attacks**, *Security seminar*, MIT, Boston, USA.

Septembre 2018 **CacheQuote: Efficiently Recovering Long-term Secrets of SGX EPID via Cache Attacks**, *Security seminar*, University of Pennsylvania, Philadelphia, USA.

August 2018 **Characterizing overstretched NTRU Attacks**, *Mathcrypt*, Santa Barbara, USA.

Major scientific achievements

Record computations

February 2021 **Discrete logarithm computation in $GF(p^6)$ of 521 bit with Tower NFS**, *with Pierrick Gaudry and Cécile Pierrot*, Record announced in the mailing liste NMBRTHRY of number theory.

Common Vulnerabilities Exposures (CVE)

May 2018   **CVE-2018-3691**, *for the CacheQuote attack.*

Scientific activities

Co-Organizer   **Workshop on Attacks in Cryptography (WAC5)**, *affiliated with Crypto 2022*, with Shaanan Cohney.

Program committees   **ACM CCS 22', Crypto 23'**.

External reviewing   **Crypto 17'/22', Asiacrypt 18'/19'/22', CHES 18', Designs, Codes and Cryptography (journal), Eurocrypt 20'/22'**.

Translation   **Exercises and solutions for Calculus I and II, translation from French to English**, *EPFL*, Lausanne, Sep 2014 - June 2015.

Outreach   **Television report, Arte journal**, *Cybersécurité: la science des codes secrets*, 26 of July 2021.

Teaching activities

Supervision of students

May-July 2019   **Co-advising undergraduate internship for a student from ENS Rennes**, *INRIA*, Nancy, France, student name: Rémi Piau.

Project: The student implemented and improved an attack designed by myself which allowed to break the signature algorithm ECDSA using partial information collected from a side-channel attack. This collaborative work lead to the paper *A Tale of Three Signatures: practical attack of ECDSA with wNAF* accepted at Africacrypt 2020 and published in its proceedings.

Courses

Dec 2020 - Jan 2021   **Introduction à l'apprentissage automatique (in French), exercise sessions**, *École des Mines, second year*, Nancy, France.

Oct - Dec 2020   **Python (in French), exercise sessions**, *École des Mines, first year*, Nancy, France.

Jan - March 2020   **Cryptography and Authentication (in English), Lectures and exercise sessions**, *Télécom Nancy (ESIAL), second year ISS*, Nancy, France.

Jan - March 2020   **Introduction to Cryptography (in English), Lectures and exercise sessions**, *Télécom Nancy (ESIAL), second year Formation par Apprentissage*, Nancy, France.

Feb -June 2013   **General Physics II (in English), exercise sessions**, *EPFL*, Lausanne, Switerland.

Other

July 2013   **Humanitarian project EMaHP (EPFL Mathematic Humanitarian Project)**, *workshops and vulgarisation of mathematics for students from middle school and highschool*, South Africa.