

# Gabrielle De Micheli

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## Personal Information

- Date and place of birth: 11<sup>th</sup> 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

- January 2022 **Prix de thèse Gilles Kahn 2022**, 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## Unpublished work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, Heninger **Recovering cryptographic keys from partial information, by example**, *Cryptography ePrint Archive: Report 2020/1506*, 2021.

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## Invited talks and presentations

- 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.

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## 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.

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## Scientific activities

- Co-Organizer **Workshop on Attacks in Cryptography (WAC5)**, *affiliated with Crypto 2022*, with Shaanan Cohney.
- Program committees **ACM CCS 22'**.
- External reviewing **Crypto 17'/22'**, **Asiacrypt 18'/19'**, **CHES 18'**, **DCC (journal)**, **Eurocrypt 20'/22'**.
- Translation **Exercises and solutions for Calculus I and II**, translation from French to English, *EPFL*, Lausanne, Sep 2014 - June 2015.

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## 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.