



Jesús Javier Chi Domínguez

Ph.D. degree

- 26 January 1992
- Abu Dhabi, UAE
- +971 58 900 7196,
+52 1 55 3576 1747
- jjchidguez.github.io
- chidoys@gmail.com

About me

I feel comfortable learning about another computer science (and mathematical) topics different from mine. I display great curiosity and attempts to fit my diverse experiences into a clear understanding of the world. In summary, I am a mathematician cryptographer whom loves programming.

Skills

Cryptanalysis



Analysis and design of algorithms



C-code programming



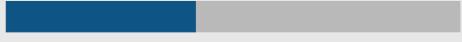
Python-code programming



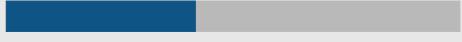
Magma-code programming



Bash & Shell-script programming



Git



C-code programming*

5.0

Analysis and design of algorithms*

4.5

(*)[The skill scale is from 0 (Fundamental Awareness) to 6 (Expert).]

Current work

About to start working at the Cryptography Research Centre (CRC) of the Technology Innovation Institute (TII), Abu Dhabi, UAE. I'm currently focusing on the (mathematical and probabilistic) study of side-channel analysis applied to both existing and emerging cryptosystems. Additionally, I am also collaborating in the cryptanalysis and secure C-code implementations of elliptic-curve and isogeny-based cryptographic protocols.

Interests

Public-key and post-quantum cryptography, cryptanalysis, elliptic-curve and isogeny-based cryptography; C and Python -code software development.

Education

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|-----------|---|--------------------------------------|
| 2016-2019 | Computer Science Department, Center for Research and Advanced Studies of the National Polytechnic Institute of Mexico (Cinvestav - IPN) | Ph.D. degree on Computer Science. |
| | Thesis: Elliptic curves in classical and post-quantum cryptography. | |
| | Advisor: Dr. Francisco José Rambó Rodríguez Henríquez. | |
| 2013-2015 | Computer Science Department, Center for Research and Advanced Studies of the National Polytechnic Institute of Mexico (Cinvestav - IPN) | Master's degree on Computer Science. |
| | Thesis: The gGHS attack applied on Galbraith-Lin-Scott curves. | |
| | Advisor: Dr. Francisco José Rambó Rodríguez Henríquez. | |
| 2009-2013 | Faculty of Mathematics, Autonomous University of Yucatán (FMAT - UADY) | Bachelor's degree on Mathematics |
| | Degree obtained by general grade point average modality | |

Publications

Conferences

- | | |
|------|--|
| 2021 | V. Sedlacek, J.-J. Chi-Domínguez, J. Jancar, B. B. Brumley, <i>A Formula for Disaster: A Unified Approach to Elliptic Curve Special-Point-Based Attack</i> , Advances in Cryptology - ASIACRYPT 2021, LNCS 13090 (2021), 130–159. |
| 2020 | D. Belyavsky, B. B. Brumley, J.-J. Chi-Domínguez, L. Rivera-Zamarripa, I. Ustinov, <i>Set It and Forget It! Turnkey ECC for Instant Integration</i> , Annual Computer Security Applications Conference - ACSAC 2020, ACM (2020), 760-771. |
| 2020 | S. ul Hassan, I. Gridin, I. Delgado-Lozano, C. Pereida García, J.-J. Chi-Domínguez, A. Cabrera Aldaya, and B. B. Brumley, <i>Déjà Vu: Side-Channel Analysis of Mozilla's NSS</i> , Conference on Computer and Communications Security - CCS 2020, ACM (2020), 1887-1902. |
| 2019 | D. Cervantes-Vázquez, M. Chenu, J.-J. Chi-Domínguez, L. De Feo, F. Rodríguez-Henríquez, and B. Smith, <i>Stronger and Faster Side-Channel Protections for CSIDH</i> , Progress in Cryptology - LATINCRYPT 2019, LNCS 11774 (2019), 173-193. |
| 2018 | G. Adj, D. Cervantes-Vázquez, J.-J. Chi-Domínguez, A. Menezes, and F. Rodríguez-Henríquez, <i>On the cost of computing isogenies between supersingular elliptic curves</i> , Selected Areas in Cryptography - SAC 2018. LNCS 11349 (2018), 322-343. |
| 2015 | J.-J. Chi and T. Oliveira, <i>Attacking a Binary GLS Elliptic Curve with Magma</i> , Progress in Cryptology - LATINCRYPT 2015. LNCS 9230 (2015), 308-326. |



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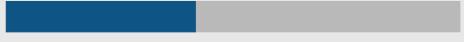
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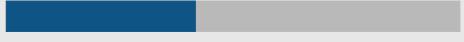
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Analysis and design of algorithms*

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Journals

- 2021 J. Chávez-Saab, J.-J. Chi-Domínguez, S. Jaques, F. Rodríguez-Henríquez
The SQALE of CSIDH: sublinear Vélu quantum-resistant isogeny action with low exponents, Journal of Cryptographic Engineering, (2021), doi: <https://doi.org/10.1007/s13389-021-00271-w>
- 2021 J.-J. Chi-Domínguez, F. Rodríguez-Henríquez, B. Smith
Extending the GLS endomorphism to speed up GHS Weil descent using Magma, Finite Fields and Their Applications, 75 (2021), doi: <https://doi.org/10.1016/j.ffa.2021.101891>
- 2020 J.-J. Chi-Domínguez, F. Rodríguez-Henríquez,
Optimal strategies for CSIDH, Advances in Mathematics of Communications, 2020, doi: [10.3934/amc.2020116](https://doi.org/10.3934/amc.2020116)

Given talks

- 2021 Summer School name: ASCRYPTO 2021. Talk given: *A quick journey on what SI[DH/KE] is*
- 2019 Conference name: LATINCRIPT 2019. Paper presented: *Stronger and Faster Side-Channel Protections for CSIDH*
- 2018 Conference name: SAC 2018. Paper presented: *On the cost of computing isogenies between supersingular elliptic curves*
- 2015 Conference name: LATINCRIPT 2015. Paper presented: *Attacking a Binary GLS Elliptic Curve with Magma*

Experience

- 2020 Postdoctoral Research Fellow at the Faculty of Information Technology and Communication Sciences of Tampere University, Finland. Advised by Prof. Dr. Billy Bob Brumley. February - Present (12 months).
- 2015 Research stay at the Department of Computer Science and Engineering of Sabanci University, Turkey. Under the guidance of Prof. Dr. Erkay Savas and Dr. Osmanbey Uzunkol. From April to July.

Other information

I was part of the PC members in the 7th International Conference on Cryptology and Information Security in Latin America – LATINCRIPT 2021, Bogota, Colombia.