

CURRICULUM VITAE

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1 Scientific performance.

1.1 Education:

- Licenciado en Matemática, 1999, Universidad de Buenos Aires, Argentina. (Director: Dr. Fernando Cukierman)
- Ph.D. at the University of Texas at Austin, 18th of August of 2003. (Advisor Dr. Fernando Rodriguez-Villegas).

1.2 Scholarships and Awards:

- Department of Mathematics Fellowship at University of Texas at Austin from June 1999 to January 2000.
- Department of Mathematics Fellowship at University of Texas at Austin from May 2000 to August 2000.
- Professor and Mrs. Hubert S. Wall Endowed Presidential Fellowship in Mathematics at University of Texas at Austin from September 2000 to May 2001.
- Frank Gerth III Dissertation Awards, June 2003.
- CONICET (the national research agency of sciences) Postdoctoral grant from April 2004 to March 2006.
- CONICET grant for young researchers (to visit the Centre de Recerca Matemàtica, Barcelona) from August 2009 to July 2010.
- Leverhulme Visiting Professor at Warwick University from January 2016 to December 2016 (see official web page).

- Regular Associate of the ICTP (International Center for Theoretical Physics) from January 1st 2019 to December 31st 2024 (see official web page).

1.3 Long Term Research Visits

- From September 2009 to July 2010: a year at the Centre de Recerca Matemàtica, Barcelona, Spain (participating in the research program Arithmetic Geometry).
- From 1st of January to the 31st of December 2016, University of Warwick as part of the Leverhulme Visiting Professor position.
- From 1st of January to 28th of February 2019 ICTP (international center for theoretical physics), Trieste, as part of the Associate program.

1.4 Research Positions.

- Research group in cryptography at Core-SDI, 1998-1999.
- Graduate Research Assistant, University of Texas at Austin, September 1999 to September 2002.
- Investigador Asistente (assistant researcher) of the CONICET from May 2007 to January 2010 (EXPTE 5560/05).
- Investigador Adjunto (adjoint researcher) of the CONICET from January 2010 to November 2017 (EXPTE 5984/09).
- Investigador Independiente (independent researcher) of the CONICET since November 2017 (EXPTE 7761/16).

1.5 Publications:

1. Futoransky, Ariel; Kargieman, Emiliano and Pacetti, Ariel; “An attack on CRC- 32 integrity checks on encrypted channels using CBC and CFB modes”. Proceedings DISC’98, Universidad Nacional Autonoma de Mexico (UNAM) 1998
2. Pacetti, Ariel; Rodriguez-Villegas Fernando, “Computing weight 2 modular forms of level p^2 ”. Math. Comp. 74 (2005).
3. Pacetti, Ariel, “A formula for the central value of certain Hecke L-functions”. Journal of Number Theory 113 (2005).
4. Avendaño, Martín; Krick, Teresa and Pacetti, Ariel. “Newton-Hensel interpolation lifting”. Foundations of Computational Mathematics Vol. 6 Number 1, pp. 82-120 (2006).
5. Pacetti, Ariel; Tornaría Gonzalo, “Examples of Shimura correspondence for level p^2 and real quadratic twists”. Ranks of elliptic curves and random matrix theory, 289–314. London Math. Soc. Lecture Note Ser., 341, Cambridge Univ. Press, Cambridge, 2007.

6. Pacetti, Ariel; Tornara, Gonzalo, “Shimura Correspondence for level p^2 and the central values of L-series”. *Journal of Number Theory* 124, Number 2 , pp. 396-414 (2007).
7. Pacetti, Ariel, “On the embedding problem for 2^+S_4 representations”. *Math. Comp.* 76, pp. 2063-2075 (2007).
8. Pacetti, Ariel; Tornara Gonzalo, Computing central values of twisted L-series, the case of composite levels. *Experimental Mathematics* 17, Number 4 (2008), pp. 459-471.
9. Pacetti, Ariel, “Shimura Correspondence and central values of twisted L-series”. *Proceeding of the “Segundas Jornadas de Teora de Numeros”*, *Bibl. Rev. Mat. Iberoamericana* (2008) 221–242.
10. Dieulefait, Luis; Guerberoff, Lucio and Pacetti, Ariel, “Proving Modularity for a given elliptic curve over an imaginary quadratic field”. *Math. Comp.* 79 (2010), no. 270, 1145–1170.
11. Dieulefait, Luis; Pacetti, Ariel and Schutt Mathias, “Modularity of the Consani-Scholten quintic”, *Documenta Mathematica* 17 (2012), pp. 953-988.
12. Pacetti, Ariel, “On the change of root numbers under twisting and applications”, *Proceedings of the American Mathematical Society* 141, N. 8 (2013), pp. 2615-2628.
13. Pacetti, Ariel and Tornara Gonzalo, “Shimura Correspondence for level p^2 and the central values of L-series II” *International Journal of Number Theory* Vol. 10, No. 07, pp. 1595-1635 (2014)
14. Pacetti, Ariel and Sirolli, Nicolas, “Computing ideal class representatives in quaternion algebras”, *Math. Comp.* 83 (2014), 2479-2507.
15. Dieulefait, Luis and Pacetti, Ariel, “Connectedness of Hecke Algebras and the Rayuela conjecture: a path to functoriality and modularity”, *Arithmetic and geometry*, 193–216, *London Math. Soc. Lecture Note Ser.*, 420, Cambridge Univ. Press, Cambridge, 2015.
16. Berger, Tobias; Dembele, Lassina; Pacetti, Ariel and Mehmet Haluk Sengun “Theta Lifts of Bianchi Modular Forms and Applications to Paramodularity”, *Journal of the London Mathematical Society* 92 (2015) 353-370.
17. Kohen, Daniel and Pacetti, Ariel, “Heegner points on Cartan non-split curves”, *Canadian Journal of Mathematics* 68 (2016), 422-444.
18. Burgos-Gil, Jose Ignavio and Pacetti, Ariel, “Hecke and Sturm bounds for Hilbert modular forms over real quadratic fields”, *Mathematics of Computations* 86, N. 306 (2017), pp. 1949-1978.
19. Camporino, Maximiliano and Pacetti, Ariel, “Congruences between modular forms modulo prime powers”, *Revista Matematica Iberoamericana* Volume 34 Issue 4 (2018), 1609-1643.
20. Kohen, Daniel and Pacetti, Ariel, “On Heegner points for primes of additive reduction ramifying in the base field”, with an appendix by Marc Masdeu, *Transactions of the AMS* 370 (2018) 911-926.

21. Kohen, Daniel; Pacetti, Ariel, “Anticyclotomic p-adic L-functions for additive reduction primes”, *Comptes Rendus Mathématique* 356, Volumen 10 (2018) 973-983.
22. Loeffler, David; Lassina, Dembélé and Pacetti, Ariel, “Non-parititious Hilbert modular forms”, *Mathematische Zeitschrift* 292 (2019) 361-385.
23. Cremona, John; Pacetti, Ariel, “On Elliptic Curves of prime power conductor over imaginary quadratic fields with class number one”, *Proceedings of the London Mathematical Society* 118, Issue 5 (2019) 1245-1276.
24. Brumer, Armand; Pacetti, Ariel; Poor, Cris; Tornara, Gonzalo; Voight, John and Yuen David, “On the paramodularity of typical abelian surfaces”, *Algebra and Number Theory* Volumen 13, Number 5 (2019) 1145-1195.
25. Dieulefait, Luis; Pacetti, Ariel and Tsaknias, Paganiotis, “On the number of Galois orbits of newforms”, to appear in the *Journal of the European Mathematical Society* (arXiv:1805.10362)
26. Cremona, John; Dembele, Lassina; Pacetti, Ariel; Schembri, Ciaran and Voight, John, “On rational Bianchi newforms and abelian surfaces with quaternionic multiplication”, submitted (arXiv:1907.12103)
27. Barrera Salazar, Daniel; Pacetti, Ariel and Tornara, Gonzalo, “On 2-Selmer groups and quadratic twists of elliptic curves”, to appear in *Mathematical Research Letters* (arXiv:2001.02263)
28. Pacetti, Ariel; Villagra-Torcomian, Lucas, “ \mathbb{Q} -curves, hecke characters and some Diophantine equations”, submitted (arXiv:2007.11486)

1.6 Selected Talks in Conferences:

- Title: Construccion de un retculo de dimension cuatro que no es proyectivo al mirarlo como modulo sobre su anillo de endomorfismos. LIII Reunion Anual de Comunicaciones Cientficas, Union Matemtica Argentina. Held at the Universidad Nacional de Ro Cuarto, Cordoba from October 15th to October 17th, 2003.
- Title: lgebras de cuaterniones y sus aplicaciones a la teora de nmeros. XII Encuentro Rioplatense de Algebra y Geometra Algebraica, held at the Universidad de Buenos Aires between May 17 and May 21, 2004.
- Title: Una frmula para el valor central de ciertas L-funciones de Hecke. XVIII Seminari de Teoria de Nombres de Barcelona, held at the Universidad de Barcelona from January 19th to January 23rd, 2004.
- Title: Shimura correspondence for weight $3/2$ modular forms and quaternion algebras. Primeras Jornadas de Teora de Nmeros held at Vilanova i la Geltr, Barcelona between the 30th of June and the 2nd of July, 2005.
- Title: Formas modulares de peso 1 y representaciones Galoisianas. XVI Coloquio Latinoamericano de lgebra held at Colonia del Uruguay between the 1st and the 9th of August, 2005.

- Title: Formas modulares de peso $3/2$ y su relación con las curvas elípticas, Coloquio FAMAF, Universidad Nacional de Córdoba, 1st of November 2005.
- Title: The congruent number problem, an introduction to Number Theory, Coloquio da Universidade de Coimbra, 29th of November 2005.
- Title: Aritmética en Álgebras de Cuaterniones, III Encuentro Nacional de Algebra between the 31st of July and the 5th of August 2006.
- Title: Puntos Racionales en Curvas, Universidad de la República (Uruguay), 30th of September 2006.
- Title: Números congruentes, curvas elípticas y formas modulares, XVI Encuentro Rioplatense de Álgebra y Geometría Algebraica, between the 12th and the 15th of December, 2006.
- Presentation Workshop: L-functions, ranks of elliptic curves and random matrix theory, Banff, Canada, between the 9th and the 13th of July, 2007.
- Title: Correspondencia de Shimura en nivel p^2 , Segundas Jornadas de Teoría de Números, Madrid, Spain, between the 16th and the 19th of July, 2007.
- Title: Shimura correspondence and central values of L-series, International conference on the Algebraic and Arithmetic Theory of Quadratic Forms, held at Frutillar, Chile between the 13th and the 19th of December, 2007.
- Title: El sistema criptográfico NERDS, Jornadas de Criptografía y Códigos held at Colonia del Uruguay between the 11th and the 14th of August, 2008.
- Title: Construction of half integral weight modular forms and applications, “Arithmetic Geometry Seminar” at CRM, 15th of October 2009.
- Title: “Representaciones de Galois y Modularidad”, Coloquio Universidad Autónoma de Madrid, 30th of April 2010.
- Title: Modularity of the Consani-Scholten quintic, Arithmetic of Modular Forms and Modularity Results held at the Centre de Recerca Matematica (Barcelona) between the 5th and the 9th of July 2010.
- Title: Hecke and Sturm bounds for Hilbert modular surfaces, Computations with Modular Forms 2011 held at Heidelberg between the 5th and the 8th of September 2011.
- Title: Congruencias entre representaciones de Galois, CLAM 2012, held at Córdoba between the 6th and the 10th of August 2012.
- Title: Proving Modularity of Galois Representations, Number Theory Seminar, University of Warwick, 14th of March 2013.
- Title: Half integral weight modular forms, Explicit Methods for Modular Forms, Warwick University, between the 18th and the 22th of March 2013.

- Title: Computing tables of elliptic curves, FoCM 2014 Conference, Universidad de la República (Uruguay), between the 11th and the 13th of December 2014.
- Title: Computing Elliptic Curves over Number Fields, Explicit Methods in Number Theory, Oberwolfach, between the 5th and the 11th of July 2015.
- Title: On the paramodular conjecture, Modular forms and curves of low genus, ICERM 2015, between the 28th of Septiembre and the 2nd of October 2015.
- Title: Computing tables of elliptic curves over $\mathbb{Q}(i)$, Explicit methods in number theory: congress in honour of Cremona's 60th birthday, Warwick University, between the 4th and the 8th of April 2016.
- Title: Elliptic Curves over PID imaginary quadratic fields, Bianchi modularity workshop, Luxemburgo, between the 11th and the 15th of July 2016.
- Title: Congruences between 2-dimensional Galois representations and applications, Automorphic forms: theory and computations, King's College London, between the 5th and the 9th of September 2016.
- Title: Non-parititious Hilbert Modular Forms, Mathematical Congress of the Americas, between the 24th and the 28th of July 2017.
- Title: Paramodular Conjecture, Primer encuentro conjunto de la Real Sociedad Matemática Española y la Unión Matemática Argentina, between the 11th and the 15th of December 2017.
- Title: On the number of Galois orbits of newforms, 2018 ICM Satellite conference on automorphic forms, galois representations and L-functions, Río de Janeiro, between the 23rd and the 27th of July 2018.
- Title: On the paramodular conjecture, plenary lecture at the octavas jornadas de teoría de números, Vilanova i la Geltrú (Barcelona), between the 25th and the 28th of June 2019.
- Organizer of the research project "Langlands functoriality", at the workshop Number Theory in the Americas, Oaxaca, between the 11th and the 16th of August 2019.

1.7 Online Talks:

- Title: \mathbb{Q} -curvas, modularidad y problemas diofánticos, seminario LATEX, June 18th 2020.
- Title: Modularity of some geometric objects: definitions, reasons and state of the art. ICTP math associates seminar, August 6th 2020.

1.8 Funded Research Projects:

- Member of the group "Computational Number Theory", funded by a TARP grant from the City of Austin (09/1999-06/2001). More information can be found on the webpage: <http://www.ma.utexas.edu/users/villegas/cnt/cnt-frames.html>.

- Member of PAV 2003 Aplicaciones e integración interdisciplinaria de la matemática (número 120), subproyecto Geometría Algebraica, Teoría de Números y aplicaciones, funded by the Agencia Nacional de Promoción Científica y Tecnológica.
- Programación Científica UBACYT 2006/2009; Research Project: *Shimura's correspondence for weight 2 modular forms*. Code: X867. Director: Pacetti, Ariel.
- PICT2006 Tipo B (Young Researchers) Code: 312. Research Project: *Shimura's Correspondence*. Director: Pacetti, Ariel.
- Programación Científica UBACYT 2008/2011; Research Project: *Topics con Computational Algebra*. Code: X113. Director: Teresa Krick. Role: researcher.
- PIP 2010-2012, Research Project: *Computational Algebra, Arithmetics and Complexity*. Code: 11220090100801. Director: Teresa Krick.
- PICT-2010-0681 , Research Project: *Computational Algebra, Arithmetics and Complexity*. Director: Teresa Krick. Role: researcher.
- PICT-2013-0294, Research Project: *Computational Algebra and Arithmetic*. Director: Teresa Krick. Role: researcher.
- PICT-2018-02073, Research Project: *Arithmetic Geometry*. Director: Ariel Pacetti (budget \$1.380.000 argentinian pesos). The official resolution can be found here

1.9 Conferences Attended:

- XLVIII Reunión Anual de Comunicaciones Científicas, Unión Matemática Argentina, held at the Universidad del Comahue, Bariloche, September,1998.
- Arizona Winter School 2000. Held at the University of Arizona, Tucson (USA), March, 2000.
- Arizona Winter School 2001. Held at the University of Arizona, Tucson (USA), March, 2001.
- Explicit Methods in Number Theory. Held at the Institut Henri Poincaré, Paris (France) from the 28th of November to the 10th of December, 2005.
- Advance Couse on Shimura Varieties and L-functions, Centre de Recerca Matemática, from the 19th to the 24th of Octubre 2009.
- Autumn School “Towards a p-adic Langlands correspondence”, held at the Mathematical Research Institute of the University of Sevilla from the 26th to the 30 of October 2010.
- Workshop “géométrie arithmétique” in honor of Jean-Marc Fontaine, Institute Henri Poincaré, from the 22nd to the 26th of March 2010.

1.10 Conferences Organized:

- “Jornadas de Criptografía y Códigos Autocorrectores”, Universidad Nacional de Mar del Plata, 20th to 24th of November 2006.
- Workshop: *Arithmetic of Modular forms and Elliptic Curves*, IMPA, Rio de Janeiro, between the 3rd and the 14th of January 2011.
- Local organizer of AGRA 2018 (school on Arithmetic, Groups and Analysis), held in Córdoba between the 9th and the 20th of July of 2018.
- Member of the scientific committee of the eENA IX, held in La Falda (Córdoba) between the 29th of July and the 2nd of August 2019.
- In April 2020, due to the Coronavirus lock-down, with Ricardo Menares (Pontificia Universidad Católica de Chile) and Gonzalo Tornaría (Universidad de la República, Uruguay) we organized the “Seminario Latinoamericano de Teoría de Números” (LATE_N).

1.11 Other elements

- Member of the Ph.D. committee of Juan Mighel Velásquez Soto, thesis title “Retículos en \mathbb{R}^4 y el problema del cuantizador óptimo”, 18th of December 2012, Universidad Nacional de Córdoba.
- Member of the Ph.D. committee of Diego Sulca, thesis title “Funciones zeta de grupos”, 26th of August 2015, Universidad Nacional de Córdoba.
- Member of the viva for the Ph.D. of Angelos Koutsianas, thesis title “Applications of S -unit equations to the arithmetic of elliptic curves”, 19th of July 2016, Warwick University.
- Member of the Ph.D. committee of Horacio Navarro Oyola, thesis title “Estudio asintótico de torres y subtorres de cuerpos de funciones”, 22nd of February 2018, Universidad Nacional del Litoral.

2 Academic achievements.

2.1 Teaching Positions.

- Ayudante de Segunda, Universidad de Buenos Aires, 1998-1999.
- Ayudante de Primera con dedicación semi-exclusiva, Universidad de Buenos Aires, February 1999 to June 1999.
- Ayudante con dedicación simple, Universidad de San Andrés, February 1999 to June 1999.
- Ayudante con dedicación simple, Universidad Nacional de General Sarmiento, March 1998 to June 1999.
- Teaching Assistantship, University of Texas at Austin, September 2002 to July 2003.

- Jefe de Trabajos Prácticos (a position between teaching assistant and auxiliary professor) con dedicación exclusiva interino de September 2003 to March 2005.
- Jefe de Trabajos Prácticos con dedicación exclusiva regular desde March 2005 to March 2008 (on license from March 2006 to March 2008).
- Temporary full time Adjoint Professor, from March 2006 to September 2012.
- Regular full time Adjoint Professor at the Universidad de Buenos Aires, since September 2012 to March 2019 (with license since March 2017). The official document is at http://www.uba.ar/archivos_uba/2012-09-26_5364.pdf
- Associate Professor at the Universidad Nacional de Córdoba, from March 2017 to March 2019 (official resolution 70/2017 web page).
- Full Professor at the Universidad Nacional de Córdoba, since March 2019 (resolution code: Res. CD 90/2019)

2.2 Students:

Undergraduate:

- Guerberoff, Lucio. Tesina de Licenciatura: “Teoría de Cuerpos de Clases”, February 2007 (Universidad de Buenos Aires).
- Valdetaro, Marcelo. Tesina de Licenciatura: “Elliptic curves over $\mathbb{Q}(t)$ with high rank”, November 2008 (Universidad de Buenos Aires).
- Camporino, Maximiliano. Tesina de Licenciatura: “Conjeturas de Serre”, March 2011 (Universidad de Buenos Aires).
- Kohen, Daniel. Tesina de Licenciatura: “Puntos de Heegner”, March 2013 (Universidad de Buenos Aires).
- Vescovo, Nicolás. Tesina de Licenciatura: “Sumas de cuatro cuadrados y Formas modulares”, March 2013 (Universidad Nacional de La Plata).
- Villagra Torcomian, Lucas. Tesina de Licenciatura: “Correspondencia de Langlands en dimensión 1”, 15 de Marzo 2019 (Universidad Nacional de Córdoba).

Graduate:

- Quattrini, Patricia; Ph.D. co-advisor. Title: “El efecto de la torsión en la distribución de Sha de los twists cuadráticos de una curva elíptica”, July 2008.
- Guerberoff, Lucio; joint with Michael Harris. Ph.D. thesis: “Modularity lifting theorems for unitary groups”, 24th of August 2011.
- Sirolli, Nicolás, Ph.D. thesis: “Cálculo de formas de Hilbert de pesos entero y medio entero”, 9th of July 2013.

- Camporino, Maximiliano; Ph.D. thesis: “Congruences between modular forms modulo prime powers”, 11th of December 2015.
- Kohen, Daniel; Ph.D. thesis: “Construction of Heegner points”, 4th of August 2017.
- Villagra Torcomian, Lucas; Ph.D. student since March 2019 with a CONICET grant.
- Mayorga Uruburu, Nicolas; Ph.D. student since March 2019 with a CONICET grant.

2.3 Short courses:

- Introducción a la Criptografía. LIV Reunión Anual de Comunicaciones Científicas, Unión Matemática Argentina, held at Neuquén between the 11th and the 15th of October, 2004.
- Title: Curvas Elípticas y Criptografía, course given at the FAMAF, Universidad Nacional de Córdoba between the 11th and the 18th of August 2006.
- Introducción a la Teoría de Números. Jornadas de Criptografía y Códigos Correctores, held at Mar del Plata between the 20th and the 24th of November, 2006.
- Elliptic Curves. EIENA IV (encuentro nacional de álgebra), held at La Falda between the 4th and the 9th of August, 2008.
- Formas Modulares: construcción y aplicaciones, AGRA II, 2015 held at Cusco between the 8th and the 22nd of August 2015 (notes available here).
- Representaciones de Galois, AGRA III, 2018, held at Córdoba (Argentina) between the 9th and the 20th of July 2018 (notes available here).

2.4 Advances courses.

I prepared (and lectured) the contents for the following courses:

- *Number Theory*, Universidad de Buenos Aires 2007.
- *Arithmetic of Elliptic curves*, Universidad de Buenos Aires, 2006 and 2014.
- *Quadratic Forms*, Universidad de Buenos Aires, 2008.
- *Computing with Modular Forms*, TCC (tought course center) course (a videoconference course between the Mathematics Departments at the Universities of Bath, Bristol, Imperial, Oxford and Warwick), University of Warwick 2016.
- *Algebraic Curves*, Universidad Nacional de Córdoba, 2018.

2.5 Books

- *Los números, de los naturales a los complejos*, together with Dr. Matías Graña, Dra. Gabriela Jerónimo, Dra. Alejandra Jancsa and Dr. Alejandro Petrovich, Ministerio de Educación, ISBN: 978-950-00-0748-1. Book aimed to high school students, to complement their knowledge on integers, rational numbers, real numbers and complex numbers.

3 Outreach activities:

- Organizer of the “Mathematical week” (a one week activity aimed to high school students), Universidad de Buenos Aires, FCEyN, from the 20th to the 22nd of May 2004.
- Organizer of the “Mathematical week”, Universidad de Buenos Aires, FCEyN, from the 17th to the 19th of May 2006.
- Organizer of the “Mathematical week”, Universidad de Buenos Aires, FCEyN, from the 2nd to the 4th of May 2007.
- Organizer of the “Mathematical week”, Universidad de Buenos Aires, FCEyN, from the 8th to the 11th of April 2008.
- General Audience talk: “Ecuaciones Diofánticas y el Teorema de Fermat”, matbaires (a divulging activity organized by the government of the Autonomous City of Buenos Aires), 8th of May 2009.

4 Management tasks

- Member of the departamental council of the Mathematical Department at the Faculty of Sciences at the University of Buenos Aires (Codep) from April 2012 to April de 2014.
- Member of the CIEM (the CONICET research institute in mathematics inside the Universidad Nacional de Córdoba) council since May 2019.
- Member of the Postgraduate studies council of the Faculty of Mathematics, Astronomy and Physics of the Universidad Nacional de Córdoba since March 2019 (the members can be found here).
- Member of the CONICET mathematical committee (consisting of 10 mathematicians nationwide) that evaluates promotions and recruitments of new researchers of the CONICET.