

RENZ JIMWEL S. MINA

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EDUCATION

- **Ph.D., Mathematics**, 2023, University of the Philippines Baguio, Philippines
 - Dissertation: Ranks of Elliptic Curves and the θ -Congruent Number Problem
 - Advisers: Jerico Bacani, Dr.rer.nat. (UPB) and Victor Manuel Aricheta, Ph.D. (UPD)
- **M.S., Mathematics**, 2020, University of the Philippines Baguio, Philippines
 - Thesis: On Exponential Diophantine Equations of the Form $p^x + q^y = z^n$
 - Adviser: Jerico Bacani, Dr.rer.nat.
- **B.S., Mathematics**, *cum laude*, 2017, University of the Philippines Baguio, Philippines

WORK EXPERIENCE

- **Assistant Professor 4** (September 2023 - present)
University of the Philippines Baguio, Baguio City, Philippines
 - Taught undergraduate courses such as Elementary Analysis (Math 53), Algebraic Structures II (Math 121), and Elementary Number Theory (Math 123).
- **Special Science Teacher I** (November 2017 - May 2020)
Unzad National High School, Villasis, Pangasinan, Philippines
 - Taught junior high school and senior high school subjects such as Statistics, Probability, Algebra, Logic, and Geometry.

SELECTED RESEARCH PUBLICATIONS

1. Mina, R. J. S., & Bacani, J. B. (2023). On nonsolvability of exponential Diophantine equations via transformation to elliptic curves. *Italian Journal of Pure and Applied Mathematics*, 49, 196-205. https://ijpam.uniud.it/online_issue/202349/16%20Bacani-Mina.pdf
2. Mina, R. J. S., & Bacani, J. B. (2023). On the Diophantine Equation $p^x + (p+5)^y = z^2$, where p is Odd Prime. *Thai Journal of Mathematics*, 21(1), 67-75. <https://thaijmath2.in.cmu.ac.th/index.php/thaijmath/article/view/1441>
3. Mina, R. J. S., & Bacani, J. B. (2023). Elliptic Curves of Type $y^2 = x^3 - 3pqx$ Having Ranks Zero and One. *Malaysian Journal of Mathematical Sciences*, 17(1), 67-76. <https://mjms.upm.edu.my/lihatmakalah.php?kod=2023/March/17/1/67-76>
4. Mina, R. J. S., & Bacani, J. B. (2023). Families of Mordell Curves with Non-trivial Torsion and Rank of at Least Three. In *Mathematics and Computing: ICMC 2022, Vellore, India, January 6-8* (pp. 155-162). Singapore: Springer Nature Singapore. https://link.springer.com/chapter/10.1007/978-981-19-9307-7_13
5. Mina, R. J. S., & Addawe, R. C. (2022). A social network analysis of COVID-19 transmission in Rosales, Pangasinan, Philippines. In *AIP Conference Proceedings* (Vol. 2472, No. 1, p. 050018). AIP Publishing LLC. <https://pubs.aip.org/aip/acp/article-abstract/2472/1/050018/2826236/A-social-network-analysis-of-COVID-19-transmission?redirectedFrom=fulltext>
6. Mina, R. J. S., & Bacani, J. B. (2021). On the solutions of the Diophantine equation $p^x + (p+4k)^y = z^2$ for prime pairs p and $p+4k$. *European Journal of Pure and Applied Mathematics*, 14 (2), 471-479. <https://ejpam.com/index.php/ejpam/article/view/3947>
7. Mina, R. J. S., & Bacani, J. B. (2021). On a Diophantine Equation of Type $p^x + q^y = z^3$. *Konuralp Journal of Mathematics*, 10 (1), 55-58. <https://dergipark.org.tr/en/pub/konuralpjournalmath/issue/31498/824194>

RESEARCH PRESENTATIONS

1. *Selmer groups corresponding to 2-isogenies of congruent number elliptic curves*, IMath Webinar Series, Institute of Mathematics, University of the Philippines Diliman, Philippines, October 23, 2023 (Online)
2. *Infinitely many non- θ -congruent numbers for non-special angles θ* , with Victor Manuel Aricheta, Ph.D. and Jerico Bacani, Dr.rer.nat., 50th Mathematical Society of the Philippines Annual Convention, Ateneo de Manila University, Philippines, June 1-4, 2023
3. *Mordell curves with 'moderate' rank*, DMCS Graduate Colloquium, University of the Philippines Baguio, Baguio City, Philippines, April 18, 2023
4. *The rank of elliptic curve $y^2 = x^3 - 3pqx$* , with Jerico Bacani, Dr.rer.nat., 2nd Regional Graduate Student Research Virtual Conference, University of the Cordilleras, Baguio City, Philippines, March 31, 2023 (Online)
5. *Non- $\pi/3$ -Congruent Numbers*, DMCS Graduate Colloquium, University of the Philippines Baguio, Baguio City, Philippines, January 05, 2023 (Online)
6. *Introduction to Elliptic Curves and the Congruent Number Problem and its Variants*, Kanazawa University - University of the Philippines Baguio Joint Seminar on Mathematics, February 08, 2022 (Online)
7. *Families of Mordell curves with Non-trivial Torsion and Rank of at Least Three*, with Jerico Bacani, Dr.rer.nat., 8th International Conference on Mathematics and Computing, Vellore Institute of Technology, Vellore, India, January 06 - 08, 2022 (Online)
8. *A Social Network Analysis of COVID-19 Transmission in Rosales, Pangasinan, Philippines*, with Rizavel Addawe, Ph.D., 5th Innovation and Analytics Conference & Exhibition, Universiti Utara Malaysia, Malaysia, November 23-24, 2021 (Online)
9. *Solving Diophantine Equations of the Form $p^x + (p+a)^y = z^2$ where p is Prime*, DMCS Graduate Colloquium, University of the Philippines Baguio, Baguio City, Philippines, August 20, 2021 (Online)
10. *Non-existence of solutions of Diophantine equations of type $p^x + q^y = z^n$* , DMCS Midyear School V: Graduate Research, University of the Philippines Baguio, Baguio City, Philippines, July 17-19, 2019
11. *Non-existence of solutions of Diophantine equations of the Form $p^x + q^y = z^{2n}$* , with Jerico Bacani, Dr.rer.nat., 4th International Conference on Computing, Mathematics and Statistics 2019, Ombak Villa, Langkawi Island, Malaysia, April 23-24, 2019
12. *On the exponential Diophantine equation $3^x + b^y = (b+1)^z$* , with Jerico Bacani, Dr.rer.nat., 40th Annual Scientific Meeting, National Academy of Science and Technology, The Manila Hotel, Philippines, July 11-12, 2018 (Poster)
13. *On a Diophantine equation of type $p^x + q^y = z^3$* , with Jerico Bacani, Dr.rer.nat., 45th Mathematical Society of the Philippines Annual Convention, Clark Freeport Zone, Pampanga, Philippines, May 17- 19, 2018 (Poster)
14. *The solutions of the Diophantine equation $M_p^x + M_q^y = z^2$ where M_p and M_q are consecutive Mersenne primes*, with Jerico Bacani, Dr.rer.nat., 2018 NRCP Annual Scientific Conference and 85th General Assembly, PICC, Pasay City, Philippines, March 14, 2018 (Poster)
15. *The solutions of the Diophantine equation $p^x + q^y = z^2$ for cousin primes p and q and nonnegative integers x and y* , with Jerico Bacani, Dr.rer.nat., 39th Annual Scientific Meeting, National Academy of Science and Technology, The Manila Hotel, Philippines, July 12-13, 2017 (Poster)

CONFERENCES AND SCHOOLS ATTENDED

1. *CIMPA 2023 Introduction to Galois representations and modular forms and their computational aspects*, Institute of Mathematics, University of the Philippines Diliman, Philippines, January 09-20, 2023
2. *Sab-atan 2021: International Conference on Mathematical Sciences and Applications*, Department of Mathematics and Computer Science, University of the Philippines Baguio, Philippines, November 24-26, 2021

REFEREE WORK FOR WOS/SCOPUS-LISTED JOURNALS

1. European Journal of Pure and Applied Mathematics, 2022

PUBLIC SERVICE

1. Judge, Mathematics Investigation Problem-based, Division Mathematics and Science Festival, Schools Division of Benguet, Buyagan Elementary School, November 10, 2023

AWARDS

1. Best in Research Paper in the 2nd Regional Graduate Student Research Virtual Conference, University of the Cordilleras, Baguio City, Philippines, March 31, 2023
2. University of the Philippines International Publication Award (IPA) 2023 for the publication: Mina, R. J. S., & Addawe, R. C. (2022, August). A social network analysis of COVID-19 transmission in Rosales, Pangasinan, Philippines. In *AIP Conference Proceedings* (Vol. 2472, No. 1, p. 050018). AIP Publishing LLC."
3. University of the Philippines International Publication Award (IPA) 2022 for the publication: Mina, R. J. S., & Bacani, J. B. (2021). On the solutions of the Diophantine equation $p^x + (p+4k)^y = z^2$ for prime pairs p and $p+4k$. *European Journal of Pure and Applied Mathematics*, 14 (2), 471-479.

SCHOLARSHIPS AND GRANTS

1. 2020 Department of Science and Technology - Science Education Institute (DOST-SEI) Graduate Scholarship under the Accelerated Science and Technology Human Resource Development Program-National Science Consortium (ASTHRDP-NSC)
2. University of the Philippines Office of International Linkages (UP OIL) Travel Grant, 4th International Conference on Computing, Mathematics and Statistics 2019, Ombak Villa, Langkawi Island, Malaysia, April 23-24, 2019
3. 2015 Department of Science and Technology - Science Education Institute (DOST-SEI) Undergraduate Scholarship under the Junior Level Science Scholarship (JLSS) RA 10612

SKILLS AND RESEARCH INTERESTS

- elliptic curves, Diophantine equations, number theory
- LaTeX, Python, SageMath, PARI/GP, R, MATLAB