Bobby Orozco

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Education

California State University, Fullerton Fullerton, CA
B.A. Pure Mathematics Aug 2023 – Present
GPA: 3.72

Experience

Undergraduate Researcher, CSUF Jun 2025 – Present

- Investigating connections between music theory and abstract algebraic structures such as semidirect products and affine transformations.

Undergraduate Researcher, CSUF Aug 2024 – May 2025

- Co-authored research on reconstruction of gridded data over finite Abelian groups using higher autocorrelations.
- Developed theoretical bounds on the number of autocorrelations required for reconstruction.

Undergraduate Researcher, CSUF Jun 2024 – Aug 2024

- Developed a MATLAB genetic algorithm for approximating exponential sum decompositions from target values.

Piano Instructor, Apostolic Faith Tabernacle Whittier, CA
Jan 2023 – Present

- Provide individualized piano instruction focused on technical development and gospel music.
- Design lesson plans adapted to student skill level and learning goals.

Publications

- Casper, W. Riley and **Orozco, B.** "Reconstructing Rational-Valued Functions on Finite Abelian Groups with Higher Autocorrelations." *Applied and Computational Harmonic Analysis*, 2026. `https://doi.org/10.1016/j.acha.2026.101908`
- Castillo, B., **Orozco, B.**, and Zepeda, F. "Bits and Primes: Exploring Digits of Prime Numbers in Binary." *DIMENSIONS: The Journal of Undergraduate Research in Natural Sciences and Mathematics*, California State University, Fullerton, Vol. 26 (Spring 2025).

Current Projects

- Mathematical music theory: studying relationships between music theory and group theory.

Skills

Programming: MATLAB