

Benjamin Lovitz

SUNY REU Application

Personal Statement

To Whom It May Concern:

Thank you for providing such an incredible opportunity for a few lucky undergraduates, and thank you for considering my application. I'll begin with my relevant experience that has prepared me for this REU.

In addition to my Mathematics and Physics double-major course load I am currently researching Generalized Symmetric Spaces with Dr. Catherine Buell, a member of the Bates Mathematics department. This research involves predicting double cosets of elements in  $SL(2, q)$  (the set of all  $2 \times 2$  matrices with entries mod  $q$  and determinant 1). I will be presenting our findings at a regional talk in Boston at the end of the semester. I love working on a real problem with an answer that no one has discovered yet. This research has applications in characterizing electron spin in Quantum Physics.

This research, along with my 2 years experience tutoring Math and Physics, has taught me how to clearly explain my reasoning to others. This skill is paramount when working on research with a group of people. Without effective communication and debate you lose the crucial benefit of collaboration on a project. I also take pride in my ability to write about math clearly and succinctly in Word and LaTeX alike.

I am very proficient with MatLab and Maple, and I am passable with Mathematica. I have gained these skills through my Mathematics research, my Lab Physics class this semester, and the Graph Algorithms class I took last year.

This REU offers several projects that align closely with my interests. I have several potential academic and professional pursuits, including Quantum Physics and Quantum Computing, Theoretical Physics, Graph Theory, and Algebra research. Although I have not yet taken a Quantum Physics class, I would love to be a part of the “Algebraic Graph Theory” project. The abstracts for the “Algebra” and “Topological Graph Theory” projects also caught my interest. I believe my coursework and Algebra research experience prepare me well for these projects.

I am also drawn to this REU because Potsdam is located within driving distance of Bates. Bates has a one-month semester in May, which ends on May 25<sup>th</sup>, so I would be able to simply take a bus from Bates after my Electronics course ends. This commute would be cheap, convenient, and time efficient (I am hoping to pursue Yoga teacher training in August following this REU).

In addition, I am quite interested in Potsdam’s graduate program in Mathematics. It also piques my interest that there are graduate programs in Music Performance and Composition. Although my professional interests lie in Mathematics and Physics, I am quite dedicated to piano. I am excited at the prospect of music facilities and performances to check out in the little spare time I might have during the REU.

All the best,

Benjamin Lovitz

PS: You do not see any first semester grades on my transcript because I was studying abroad in Madrid, Spain. I took a leave of absence from Bates, so none of my courses counted for Bates credit. While in Madrid I took Statistics, Game Theory, and Macroeconomics.