William Huanshan Chuang **Curriculum Vitae**

Department of Mathematics
San Francisco State University
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Education

San Francisco State University
M.A., Mathematics, Expected Spring 2022
Thesis: Hausdorff Dimensions and Limit Sets of Non-elementary Kleinian Groups
Advisor: Dr. Chun-Kit Lai

University of San Francisco
B.S., Mathematics, Fall 2018
Major GPA: 3.9/4.0
Minor in Computer Science
Graduated with Honors

Research Interests

I am interested in hyperbolic geometry, geometric group theory, low-dimensional topology, dynamical systems, harmonic analysis, mathematical physics, number theory, algebraic topology, and algebraic geometry.

On-Going Research

I am currently studying Patterson-Sullivan theory, and developing some visual method to estimate Hausdorff dimension of limit sets of Schottky groups.

Research Experience

San Francisco State University
Topology Project: A Study on Fundamental Groups, September 2020 – December 2020
Advisor: Dr. Emily Clader

San Francisco State University
Independent Study: A Study on Hom-Polytopes, September 2019 – December 2019
Combinatorics Project: A Study on Complex Simplex, January 2019 – May 2019
Advisor: Dr. Joseph Gubeladze

University of San Francisco
Independent Study: A Study on Prime Number Theorem, January 2018 – May 2018
Advisor: Dr. Paul Zeitz

Pennsylvania State University–University Park

Functional Analysis Project: A Study on Hardy's Proof on Uniform Distribution, January 2018 – May 2018
Independent Study: Reading "Lecture Notes on Functional Analysis: With Applications to Linear Partial Differential Equations", January 2018 – May 2018
Advisors: Dr. Sergei Tabachnikov and Dr. Moisey Guysinsky

Pennsylvania State University–University Park

Topology Project: Solving $(9, 8, 4, 3, 7)$-linkage problem, January 2018 – May 2018
Topology Final Project: Conway's Basic Theorem, September 2017 – December 2017
Advisor: Dr. Sergei Tabachnikov

University of San Francisco

Capstone Project: Using Graph Theory to Implement a Search Engine in Inverted Index Data Structure, January 2018 – May 2018
Advisor: Dr. Chris Bryan

University of San Francisco

Capstone Project: Applying Method of Steepest Descent and Cauchy Contour Integrals on Fisher Exact Test, January 2018 – May 2018
Advisor: Dr. Xuemei Chen

University of San Francisco

Research Assistant, August 2016 – May 2017
Worked on Lecture Notes for MSAN504 Review of Probability and Statistics
Advisor: Dr. Jeff Hamrick

University of San Francisco

Summer Research Project: Applying Combinatorics, Differential Geometry, Graph Theory, and Deep Learning in Therapeutic Video Games for Disabled Patients, June 2016 – September 2016
Capstone Project: Implementing Applications of Dijkstra Algorithm, Spring 2016
Advisor: Dr. David Galles

Pre-Baccalaureate Research Experience

National Taiwan University

Reading papers on Ads/CFT (Gauge/Gravity duality), September 2011 – May 2013
Advisor: Dr. Pisin Chen

National Taiwan University

Studying Kontsevich-Soibelmann wall crossing formula derivations and applications for mathematical quantum field theory, January 2012 – May 2012
Advisor: Dr. Heng-Yu Chen

National Taiwan University

A Study on Lee-Yang Theorem and the application of Riemann zeta function in Statistical Mechanics, January 2012 – May 2012

Advisor: Dr. Ning-Ning Pang

Teaching Experience

San Francisco State University

Graduate Teaching Assistant of Calculus, Spring 2022
Advisor: Dr. Chu-Kit Lai

San Francisco State University

Graduate Teaching Assistant of Pre-Calculus, Fall 2019
Advisor: Dr. Kim Seashore

University of San Francisco

San Francisco Math Circle, Fall 2016
Advisor: Dr. Paul Zeitz

National Dong Hwa University

Tutor of Calculus and General Physics, August 2008 – December 2009
Supervised by Department of Physics

Awards and Honors

- Dean's Honor Roll, University of San Francisco, Spring 2018
- Mathematics Advanced Study Scholarship and Internal Scholarship (from MASS program), The Pennsylvania State University–University Park, Fall 2017
- Dean's Honor Roll, University of San Francisco, Spring 2015, Fall 2016, and Spring 2017
- Pi Mu Epsilon Honor Society at University of San Francisco
- President's List, National Dong Hwa University, March 2008, November 2008, March 2009, March 2010

Skills

- Problem Solving; Can learn new skills quickly.
- Programming Languages: C/C++, LISP, Python, R, Java, Shell Script, Sed and Awk, LaTex, SageMath, Mathematica.
- Packages and Libraries: Vimtex, Zathura, Ultisnips, Inkscape, TiKz, Numpy, Pandas, Scikit, Matplotlib, Orge3D