Shaoda Ji

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EDUCATION

Xi'an Jiaotong University (XJTU) **Xi'an, China**

- Bachelor of Science Degree expected in Honors Science Program in Mathematics 09/2021-06/2025
- Cumulative GPA: 4.04/4.3; WES calculated GPA: 3.9/4.0, Major GPA: 4.0/4.0 (Class Ranking: 1/50)

University of California, Berkeley (UCB) **Berkeley, CA**

- Undergraduate Visiting Student; GPA: 4.0/4.0 01-05/2024
- Courses: Introduction to Topology and Analysis (A+), Theory of Functions of a Complex Variable (A), Partial Differential Equations (A), Differential Topology (audited)

PUBLICATION

Shaoda Ji, "*Defining Cosine Function with D' Alembert's Functional Equation*", Studies in College Mathematics
ISSN: 1008-1399, 2023, v.26; No. 217(05): 77-79

Abstract: While reference [2] determines the solution functions of d' Alembert' s functional equation by means of additional continuity conditions, this paper replaces the condition with more elementary ones, essentially determining the solutions from monotonicity, with the aim of giving an elementary definition of cosine function on the real line

TUTORIAL EXPERIENCE

Content Creator on Bilibili (Chinese counterpart of YouTube) 06/2021-present

User ID: *Fraljimetry*; Homepage link: https://space.bilibili.com/355884223?spm_id_from=333.1007.0.0

- Posted short-lectures on undergraduate & graduate level mathematics courses to share my ideas and research daily
- Received 25,000+ followers and over 1 million clicks for 2,000+ videos classified into 20+ albums

RESEARCH EXPERIENCE

Minimal Surface: Dipping A Toe in Contemporary Research 07-08/2024

- Perused the dissertation Stable Minimal Hypersurfaces in R^5 by O. Chodosh and related works
- Written a survey on recent development of minimal surface theory rooted on this paper, tutored by Prof Li

Directed Reading Program (University of California, Berkeley) 01-05/2024

- Read the book A Course in Minimal Surfaces by Colding and Minicozzi
- Discussed with my mentor Jason Zhao on the topics of Riemmanian geometry and PDE, drafted a detailed reading report independently, and delivered a presentation on the key definitions acquired from the book

Partial Differential Equations: Practiced Calculation Techniques in More Complicated Settings 09-12/2023

- Expanded the solution of the non-homogeneous wave equation using techniques such as induction, inversion of semi-diagonal matrices, and operator polynomials
- Proved Duhamel's principle for wave equations & uniqueness of Green's function for Laplace equations
- Gave a variation form of the p-Laplace equation

Real Analysis: Delved Deep into The Theory of Measures 03-05/2023

- Used the nested closed interval theorem to explain the binary definition of the Cantor set using a binary tree
- Summarized the process of constructing abstract measures
- Drew a diagram to show the intricate relationship from premeasure defined on algebra to complete measure defined on generated sigma algebra

Directed Reading Program (Xi'an Jiaotong University) 07-08/2022

- Read the book Elements of Information Theory by Thomas M. Cover and delivered a presentation
- Proved all the properties of entropy independently, communicated with my mentor Zhiqiang Wei weekly

Differential Geometry: Proved the Geodesic Formula for Spheres 06-07/2022

- Explored the geodesics of the Lobachevsky space, correlated them to the self-homotopy group of the upper half-plane (a real special linear group of order 2)
- Created the graph of the geodesic semi-circles of the Lobachevsky space by using the desmos software, and elucidated the linkage between it and coaxial circles

HONORS & SKILLS

Honors: Shuiyou Scholarship in XJTU (5/100), 2024; Changrong Qiu Scholarship (1/100), 2023; National Scholarship (1/100), 2022; 1st Prize for Chinese Mathematics Competition (TOP 2 in XJTU), 2022; 1st Prize for "Talent Cup" English Writing Competition by Foreign Studies Association (twice), 2022 & 2023;

Skills: C# (3y+ with 10,000+ lines of code experience); C (3y+ experience); C++ (3y+ experience); Python (2y+ experience); LaTeX (2y+ experience); MATLAB (2y+ experience)