

# Xu Zhu

Department of Mathematics, Shanghai Jiao Tong University  
800 Dongchuan Road, Shanghai 200240 CHINA

(+86) 136-3657-5985  
s.j.z.x@sjtu.edu.cn

## Research Interests

---

- **Combinatorics, Algebra, Financial Mathematics**

## Education

---

- **Shanghai Jiao Tong University** *Sept.2012 - June.2016*  
*BSc Mathematics and Applied Mathematics*
  - Major GPA: 93.10/100, Overall GPA: 91.98/100
  - Major Ranking: 1/50, Overall Ranking: 1/95
- **University of California, Los Angeles** *July.2015 - Sept.2015*  
*Summer Student of Cross-Disciplinary Scholars in Science and Technology*
  - GPA: 4.0/4.0

## Research Experiences

---

- **Cross-Disciplinary Scholars in Science and Technology, UCLA** *July.2015 - Sept.2015*  
*R.A Topic: A General Solution Extended from the KKT Condition for Convex Problems*  
*Mentor: Prof.Wotao Yin, Department of Mathematics, UCLA*
  - Attended the well-structured 10 seminars with both doctoral students and the mentor
  - Studied the theory and applications of operator splitting by one tutorial, two textbooks and over twenty papers
  - Supplemented the proof of the convergence theory on a newly constructed algorithm of our group
  - Conducted over one hundred numerical tests on our algorithm for the best fit of variables with  $n$  dimension
  - Completed an academic poster and a final presentation on the results achieved with L<sup>A</sup>T<sub>E</sub>X beamer
- **Research Group of Enumerative Combinatorics, SJTU** *Feb.2015 - Present*  
*Group Member Topic: Permutation and Perfect Matching*  
*Mentor: Prof.Yeong-nan Yeh, Academia Sinica, Taiwan*
  - Studied the fundamental theory in Enumerative Combinatorics through two graduate-level textbooks
  - Constructed three involutions on our formulas of permutations and extended them onto derangements
  - Constructed combinatorial bijections between perfect matchings and permutations, derangements
  - Completed an academic paper with L<sup>A</sup>T<sub>E</sub>X for writing and Coreldraw for drawing
  - Submitted the paper to *European Journal of Combinatorics* as a co-author
- **Participant in Undergraduate Research Program, SJTU** *Feb.2014 - Jun.2014*  
*Group Member Topic: Soliton Equations and Direct Method*  
*Mentor: Prof. Guofu Yu, Department of Mathematics, SJTU*
  - Studied the concept of soliton equation, the property of bilinear operators, the solution to KdV and Pfaffian by a graduate-level textbook and references
  - Computed the precise solution to a multi-component Ito equation with the methods modified from the references and drew its motion with Maple
  - Applied Pfaffian to the verification of the solution
  - Completed an academic report with publishing level
- **Undergraduate Mentor Program, SJTU** *Sept.2013 - Dec.2013*  
*Group Member Topic: Coding Theory and Design Theory*  
*Mentor: Prof.Eiichi Bannai, Department of Mathematics, SJTU*
  - Attended well-structured twelve seminars with both doctoral students and the mentor
  - Reported my study on graduate-level textbooks and discussed open problems proposed by the mentor
  - Computed the minimum size of weighted balanced incomplete block designs with basic methods as a group
  - Completed an academic report on the results achieved during the seminars

## Papers

---

[1] J. Ma, S. Ma, Y. Yeh and X. Zhu, The cycle descent statistics on permutations, submitted to *European Journal of Combinatorics*.

## Awards & Honours

---

(top 10%) Meritorious Winner, Mathematical Contest in Modeling (MCM), Worldwide	2015
(top 1%) National Second Prize, Mathematical Contest in Modeling (MCM), China	2014
(top 1%) National Scholarship, China	2013
(top 1%) First Prize, National High School Physics League, China	2011
(top 1%) First Prize, National High School Mathematics League, China	2011
(top 1%) The 36th Annual American Regions Mathematics League(ARML), Worldwide	2011
- China Team Prize: The Second Place	
- Individual Prize: High Scorer	
- Strongly recommended by Chair.Arthur Ogus to apply for U.C.Berkeley	

## Seminars & Conferences

---

Graduate Seminar of Computational Mathematics, UCLA	July.2015 - Sept.2015
Workshop on Combinatorics, SJTU	May.2015
Workshop on Combinatorics and Applications, SJTU	April.2015
Undergraduate Seminar of Orthogonal Polynomial, SJTU	Feb.2015 - June.2015
Undergraduate Seminar of Design Theory , SJTU	Sept.2013 - Dec.2014

## Skills & Extracurricular Activities

---

### Skills

- Maple, MATLAB, Python, C, C++,  $\text{\LaTeX}$

### Activities

- Minister of Math Association, SJTU Sept.2013 - June.2014
  - Organized the all the registrations and training lectures for math competitions
  - Helped association members with curriculum problems