

# QIHANG SUN

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## Research Interests

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Analytic number theory, modular form, Kloosterman sum, and their applications.  
Sphere packing, Fourier interpolation, and their connection to modular forms.

## Education & Experience

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### University of Lille, France

- Postdoc, 2024 – 2026.8 (expected). Supervisor: Dr. [Danylo Radchenko](#).

### University of Illinois Urbana-Champaign (UIUC), USA

- PhD (in Mathematics), 2019 – 2024. Advisor: Prof. Dr. [Scott Ahlgren](#).
- Thesis: Half-integral weight Kloosterman sums and integer partitions.

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

- BSc (Honors in Mathematics), 2015 – 2019. Advisor: Prof. Dr. [Jia, Junxiong](#).

## Publications & Preprints

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- 1 **Fourier interpolation in dimensions 3 and 4 and real-variable Kloosterman sums** (joint with D. Radchenko).  
*submitted*. arXiv:[2510.04873](https://arxiv.org/abs/2510.04873).
- 2 **Vanishing properties of Kloosterman sums and Dyson's conjectures.**  
Ramanujan J., 66(50), 2025. arXiv: [2406.07469](https://arxiv.org/abs/2406.07469); doi: [10.1007/s11139-024-01011-4](https://doi.org/10.1007/s11139-024-01011-4)
- 3 **Exact formulae for ranks of partitions.**  
Trans. Amer. Math. Soc., *in press*. arXiv: [2406.06294](https://arxiv.org/abs/2406.06294); doi: [10.1090/tran/9539](https://doi.org/10.1090/tran/9539)
- 4 **Uniform bounds for Kloosterman sums of half-integral weight, same-sign case.**  
J. Number Theory, 274, 2025, pp. 104-139. arXiv: [2309.05233](https://arxiv.org/abs/2309.05233); doi: [10.1016/j.jnt.2024.11.012](https://doi.org/10.1016/j.jnt.2024.11.012)
- 5 **Uniform bounds for Kloosterman sums of half-integral weight with applications.**  
Forum Math. 37(1), 2025, pp. 75-109. arXiv: [2305.19651](https://arxiv.org/abs/2305.19651); doi: [10.1515/forum-2023-0201](https://doi.org/10.1515/forum-2023-0201)
- 6 **Effective estimates for traces of singular moduli** (joint with O. González).  
Res. Number Theory 10(29), 2024. arXiv: [2305.19649](https://arxiv.org/abs/2305.19649); doi: [10.1007/s40993-024-00517-6](https://doi.org/10.1007/s40993-024-00517-6)

## Talks

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- 1 **Speed talk: Fourier interpolation and continuous Kloosterman sums.** Max-Planck-Institut für Mathematik, Bonn, Germany. Conference on "Progress and Emergent Theories in Zeta and  $L$ -Functions" (PRETZL). 2025 Jul. 22.
- 2 **Exact formulae for ranks of partitions.** International Seminar on Automorphic Forms. Online seminar. 2024 Oct. 29.

- 3 **Exact formulae for ranks of partitions.** Universität zu Köln, Germany. Number Theory Seminar. 2024 Oct. 7.
- 4 **Exact formulae for ranks of partitions.** Centre international de rencontres mathématiques (CIRM), Marseille, France. Building Bridges: 6th EU/US Summer School & Workshop on Automorphic Forms and Related Topics (BB6). École et Atelier sur les formes automorphes et interactions. 2024 Sept. 9.
- 5 **Speed talk: exact formulas for rank of partitions.** Universität zu Köln, Germany. International Conference on Modular Forms and  $q$ -Series. 2024 Mar. 12.
- 6 **Lightening talk: exact formulas for rank of partitions.** Tulane University, USA. Annual Clifford Lectures. 2023 Feb. 25.
- 7 **Asymptotics in partitions: circle method and Kloosterman sums.** UIUC. Number Theory Seminar. 2023 Oct. 17.
- 8 **Integer partitions and Kloosterman sums.** UIUC. Graduate Number Theory Seminar. 2023 Oct. 12.
- 9 **Sums of Kloosterman sums with applications to partitions.** XJTU, Xi'an, China. Number Theory Seminar. 2023 Jul. 21.
- 10 **Sums of Kloosterman sums and their applications.** EPF Lausanne, Switzerland. Workshop on Arithmetic Statistics in Automorphic Forms and Analytic Number Theory. 2023 Jun. 8.
- 11 **Uniform bounds on sums of Kloosterman sums and the applications to partitions.** Louisiana State University, USA. 35th Automorphic Forms Workshop. 2023 May 24.
- 12 **Speed talk: uniform bounds on sums of Kloosterman sums analogue to Goldfeld and Sarnak.** Max-Planck-Institut für Mathematik, Bonn, Germany. Arithmetic Statistics, Automorphic Forms and Ergodic Methods. 2023 Apr. 24.
- 13 **Uniform bounds on sums of Kloosterman sums and their application on partitions.** Technische Universität Darmstadt, Germany. Early Number Theory Researchers Workshop. 2022 Oct. 28.

## Teaching Experience (UIUC)

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- Taught discussion sections: Math 220 (Calc, FA23), 241 (Calc 3, FA21), 234 (Calc for Business, SP21).
- Grader: Math 444 (Real Analysis, SP23, FA22), 241 (Calc 3, SP23), 347 (Fundamental Math, SP20), 416 (Abstract Linear Algebra, SP20, FA19), 285/286 (ODE, FA19).
- Worked for [NetMath](#) (SP22) and [CBTF](#) (FA20) in UIUC.
- Ranked as excellent by students ([CITL link](#)), SP21, Math 234.

## Awards

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- 2024 Philippe Tondeur Dissertation Prize. ([link](#))
- 2023-24 Bateman Prize in Number Theory. ([link](#))
- 2023 Paul T. Bateman Fellowship in Number Theory. ([link](#))

## Language

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- English (fluent); Chinese (native language).
- Mathematica, Pari/GP, C++, MATLAB.