Yao-Rui Yeo

CONTACT INFORMATION

New York University
180 Madison Ave, 17th Floor
New York, NY 10016

Website: https://yaoruiy9955.github.io/
E-mail: yeoy01@nyu.edu

EDUCATION

Ph.D. in Mathematics, University of Pennsylvania — *2016 Aug – 2021 May*
Thesis advisor: Ching-Li Chai
Thesis title: Mixed Carlitz motives and colored multizeta values in characteristic p

B.A. in Mathematics, University of Minnesota — *2013 Aug – 2016 May*
Honor: Summa cum laude

EMPLOYMENT

Research Scientist, New York University — *2023 Feb – Present*

Senior Systems Analyst, New York University — *2021 Aug – 2023 Feb*

RESEARCH INTERESTS

Health and Disease Modeling
Health and welfare economics; Cost-effectiveness analysis; Decision analytic modeling

Algebraic Number Theory and Combinatorics
Arithmetic and geometry of zeta functions; Special functions, graphs, and their applications

PAPERS (* = 1ST/CO-1ST)

1. Cebisile Ngcamphalala, **Yao-Rui Yeo**, Jasmine Su, Mellesia Jeetoo, Dyanna Charles, Zwakele Tfwala, Nokuthula Mahlalela, Lenhle Dube, Ruben Sahabo, Tengetile Dlamini, Harriet Nuwagaba-Biribonwoha, Scott Braithwaite, *Determining minimum resources required by Eswatini to meet its Ending the HIV Epidemic 2030 goal*, JAIDS, to appear.
2. Tsitsi Apollo, **Yao-Rui Yeo**, Owen Mugurungi, Ngwarai Sithole, Isaac Taramusi, Emmanuel Tachiwenyika, Emily Gwavava, Wanzirai Majoni, Anesu Chimwaza, Kudawashe Takarinda, Getrude Ncube, Mellesia Jeetoo, Dyanna Charles, Scott Braithwaite. *Case study of PEPFAR funding cuts on HIV infections and deaths: Reversing hard-won gains*, AIDS **39** (2025), Issue 14, 2143–2146.
3. Jasmine Su, **Yao-Rui Yeo**, Mellesia Jeetoo, Neo Morojele, Joel Francis, Sheela Shenoi, Scott Braithwaite, *Cost-effectiveness of screening and treating alcohol use and depression among people living with HIV in Zimbabwe: a mathematical modelling study.* BMC Med. **22** (2024), No. 481.
4. **Yao-Rui Yeo***, *Algebraic independence results for colored multizeta values in characteristic p*, Int. J. Number Theory **19** (2023), No. 3, 677–708.
5. Logan Crew*, Alexander Kirillov*, **Yao-Rui Yeo***, *Branching rules for splint root systems*, Algebr. Representat. Theory **25** (2022), 963–981.
6. Wan-Jin Yeo*, **Yao-Rui Yeo***, Samu Taulu, *Towards analytical calculation of the magnetic flux measured by magnetometers*, Phys. Lett. A **411** (2021), 127545.
7. Yao-Yu Yeo*, **Yao-Rui Yeo***, Wan-Jin Yeo*, *A computational model for estimating the progression of coronavirus cases in the US West and East Coasts*, Exp. Results **1** (2020), e41.
8. Wan-Jin Yeo*, **Yao-Rui Yeo***, *Enumerating (k, l)-critical and supercritical permutations*, Math. Medley **41** (2015), No. 1.

PREPRINTS

1. **Yao-Rui Yeo***, *Regular intersection graphs of line segments.*
2. **Yao-Rui Yeo***, *Equally-distributed-equivalent income from an L-function viewpoint.*
3. **Yao-Rui Yeo***, *A functional analysis approach to analyzing inequality aversion in health.*
4. **Yao-Rui Yeo***, Mellesia Jeetoo, Dyanna Charles, Cebisile Ngcamphalala, Sheela Shenoi, Scott Braithwaite, *Could using WALYs rather than QALYs influence inferences from allocative efficiency results? A case study of HIV-related interventions in Southern Africa.*
5. **Yao-Rui Yeo***, Mellesia Jeetoo, Dyanna Charles, Scott Braithwaite, *Cost-effectiveness of implementing long acting antiretroviral therapy in Zimbabwe: A modeling study.*

INVITED PRESENTATIONS

1. Conference on Retroviruses and Opportunistic Infections, *Modeled comparison of well-being and quality-adjusted-life-years as HIV outcomes in Southern Africa*, Poster Presentation, 2026 Feb 24.

2. Joint Mathematics Meetings, *Regular intersection graphs of line segments*, Oral presentation, 2026 Jan 07.
3. Society for Medical Decision Making 47th Annual Meeting, *How much do allocative efficiency analyses change by using well-being-adjusted life-years rather than quality-adjusted life-years?*, Oral Presentation, 2025 June 16.
4. Conference on Retroviruses and Opportunistic Infections, *Cost-effectiveness of alternative targeting strategies for 3 types of PrEP in Zimbabwe*, Poster Presentation, 2025 Mar 11.
5. University of Pennsylvania, Algebra Seminar, *Colored multizeta values in characteristic p*, Oral Presentation, 2021 Mar 19.
6. Temple University, Fifth Annual Graduate Student Conference, *Branching rules for splint root systems*, Oral Presentation, 2019 June 01.
7. University of Minnesota, Undergraduate Honors Seminar, *Dessins d'enfants and superpotentials*, Oral Presentation, 2016 May 03.
8. University of Illinois at Chicago, Undergraduate Mathematics Symposium, *The Hurwitz existence problem*, Oral Presentation, 2015 Oct 24.

Stakeholder Presentations

1. Shelby County Health Department, *Allocative efficiency modeling in Memphis, 3rd workshop*, Onsite Presentation, 2025 Nov 13.
2. Shelby County Health Department, *Allocative Efficiency Modeling in Memphis, 2nd workshop*, Onsite presentation, 2025 May 22.
3. Shelby County Health Department, *Introduction to HIV intervention prioritization in Memphis*, Onsite Presentation, 2025 Feb 13.
4. Eswatini Ministry of Health, *Allocative efficiency modeling for Eswatini to meet EHE 2030 goals*, Online Presentation, 2023 May 10.
5. Zimbabwe Ministry of Health and Child Care, *Allocative efficiency modeling for Zimbabwe to meet EHE 2030 goals*, Online Presentation, 2023 Mar 29.
6. KwaZulu-Natal Department of Health, *Allocative efficiency modeling for Kwazuku-Natal to meet EHE 2030 goals*, Online Presentation, 2023 Mar 21.
7. New York City Department of Health and Mental Hygiene, *Rapid COVID-19 modeling on Delta and Omicron variants*, Bi-weekly Online Presentations, 2021 Aug – 2022 Dec.

Invited Lectures

1. University of Washington, Institute for Learning and Brain Sciences, *Analytical and numerical methods for special differential equations*, 5-Hour Lecture, 2019 Dec – 2020 Jan.

Other Invites

1. New York University, *Poster Judge*, Trainee Research Day, 2025 Apr 22.
2. University of Pennsylvania, *Booth Designer*, Math Fest, 2018 – 2020.

Awards

Distinguished Service Award, New York City Department of Health *2021*

Teaching

Tutoring Service of New York *2021 – 2025*
Subjects: Mathematics, Statistics, Physics.

Directed Reading Program, University of Pennsylvania *2020 – 2021*
Alex Kalbach, Spring 2021. Topic: The Fifteen Theorem.
Mihal Zelenin, Fall 2020. Topic: Traffic Flow Modeling and Car Accident Risk.
Esther Guan, Spring 2020. Topic: Cryptosystems.

Graduate Student Instructor, University of Pennsylvania *2019*
MATH 240 (Calculus III), Summer 2019.

Teaching Assistant, University of Pennsylvania *2017 – 2021*
MATH 603 (Algebra), Spring 2021.
AMCS 602 (Applied Algebra), Fall 2020.
MATH 241 (Calculus IV), Spring 2019.
MATH 420 (Ordinary Differential Equations), Fall 2018.
MATH 240 (Calculus III), Spring 2018.
MATH 371 (Algebra), Fall 2017.
MATH 110 (Calculus for Wharton Students), Fall 2017.
High School Summer Mathematics Academy, Summer 2017.

Others

Citizenship: Taiwan
Permanent Residence: USA
Music: Fellow of Trinity College London in Piano Performance