

# Yao-Rui Yeo

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- 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 Economics and Disease Modeling**  
*Health equity; Inequality indices; Population health metrics; Decision analytic modeling*  
**Algebraic Number Theory and Combinatorics**  
*Arithmetic and geometry of zeta functions; Special functions, graphs, and their applications*
- PAPERS (\* = 1ST/CO-1ST)
- Mellesia Jeetoo, Yao-Rui Yeo, Dyanna Charles, Anthony Moll, Sheela Shenoj, Neo Morojele, John Mbaya, Petra Zamma, Sibusiso Gasa, Joel Francis, Scott Braithwaite, *Cost-effectiveness of reducing HIV infections through screening and treating alcohol use and depression in KwaZulu-Natal, South Africa: a mathematical modeling study*, JAIDS, to appear.
  - Cebisile Ngcamphalala, **Yao-Rui Yeo**, Mellesia Jeetoo, Dyanna Charles, Zwakele Tfwala, Nokuthula Mahlalela, Lenhle Dube, Ruben Sahabo, Mfundu Motsa, Harriet Nuwagaba-Biribonwoha, R. Scott Braithwaite, *Cost-effectiveness of implementing long acting PrEP in Eswatini: A mathematical modeling study*, Lancet Reg. Health Afr., to appear.
  - Cebisile Ngcamphalala, **Yao-Rui Yeo**, Jasmine Su, Mellesia Jeetoo, Dyanna Charles, Zwakele Tfwala, Nokuthula Mahlalela, Lenhle Dube, Ruben Sahabo, Tengetile Dlamini, Harriet Nuwagaba-Biribonwoha, R. Scott Braithwaite, *Determining minimum resources required by Eswatini to meet its Ending the HIV Epidemic 2030 goal*, JAIDS **101** (2026), Issue 4, 390–398.
  - 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, R. Scott Braithwaite. *Case study of PEP-FAR funding cuts on HIV infections and deaths: Reversing hard-won gains*, AIDS **39** (2025), Issue 14, 2143–2146.
  - Jasmine Su, **Yao-Rui Yeo**, Mellesia Jeetoo, Neo Morojele, Joel Francis, Sheela Shenoj, R. 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.
  - Yao-Rui Yeo\***, *Algebraic independence results for colored multizeta values in characteristic  $p$* , Int. J. Number Theory **19** (2023), No. 3, 677–708.
  - Logan Crew\*, Alexander Kirillov\*, **Yao-Rui Yeo\***, *Branching rules for splint root systems*, Algebr. Representat. Theory **25** (2022), 963–981.
  - Wan-Jin Yeo\*, **Yao-Rui Yeo\***, Samu Taulu, *Towards analytical calculation of the magnetic flux measured by magnetometers*, Phys. Lett. A **411** (2021), 127545.
  - 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.
  - Wan-Jin Yeo\*, **Yao-Rui Yeo\***, *Enumerating  $(k, l)$ -critical and supercritical permutations*, Math. Medley **41** (2015), No. 1.
- PREPRINTS
- Yao-Rui Yeo\***, *Regular intersection graphs of line segments*.
  - Yao-Rui Yeo\***, *Equally-distributed-equivalent from an  $L$ -function viewpoint*.
  - Yao-Rui Yeo\***, *Applying Atkinson's inequality aversion index to health metrics*.

4. **Yao-Rui Yeo\***, Mellesia Jeetoo, Dyanna Charles, Cebisile Ngcamphalala, Sheela Shenoi, R. 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, R. Scott Braithwaite, *Cost-effectiveness of implementing long acting antiretroviral therapy in Zimbabwe: A modeling study.*
6. Daniel Citron\*, **Yao-Rui Yeo\***, Cebisile Ngcamphalala\*, Kasturi Bhamidipati, Harriet Nuwagaba-Biribonwoha, Zwakele Tfwala, Samkelo Simelane, Trevor Sithole, Mfundi Motsa, Sindi Matse, Velephi Okello, Anna Bershteyn, R. Scott Braithwaite, *Health impact of bilateral aid disruptions to HIV services in Eswatini: insights from a two-model study.*

INVITED  
PRESENTATIONS

1. The 26th International AIDS Conference, *Cost-effectiveness of online pharmacy-delivered PrEP in California: The PrEP-3D RCT*, Poster Presentation, Rio de Janeiro, 2026 Jul 28.
2. Society for Medical Decision Making 48th Annual Meeting, *Cost-effectiveness of implementing long-acting antiretroviral therapy in Zimbabwe: A modeling study*, Poster Presentation, Oslo, 2026 Jun 30.
3. Society for Medical Decision Making 48th Annual Meeting, *A new mathematical formulation of inequality aversion in health*, Poster Presentation, Oslo, 2026 Jun 28.
4. Conference on Retroviruses and Opportunistic Infections, *Modeled comparison of well-being and quality-adjusted-life-years as HIV outcomes in Southern Africa*, Poster Presentation, Denver, 2026 Feb 24.
5. Joint Mathematics Meetings, *Regular intersection graphs of line segments*, Oral presentation, Washington DC, 2026 Jan 07.
6. 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, Ann Arbor, 2025 Jun 16.
7. Conference on Retroviruses and Opportunistic Infections, *Cost-effectiveness of alternative targeting strategies for 3 types of PrEP in Zimbabwe*, Poster Presentation, San Francisco, 2025 Mar 11.
8. University of Pennsylvania, Algebra Seminar, *Colored multizeta values in characteristic  $p$* , Oral Presentation, Philadelphia, 2021 Mar 19.
9. Temple University, Fifth Annual Graduate Student Conference, *Branching rules for splint root systems*, Oral Presentation, Philadelphia, 2019 Jun 01.
10. University of Minnesota, Undergraduate Honors Seminar, *Dessins d'enfants and superpotentials*, Oral Presentation, Minneapolis, 2016 May 03.
11. University of Illinois at Chicago, Undergraduate Mathematics Symposium, *The Hurwitz existence problem*, Oral Presentation, Chicago, 2015 Oct 24.

STAKEHOLDER  
PRESENTATIONS

1. Shelby County Health Department, *HIV allocative efficiency modeling in Memphis, biannual workshop*, Onsite Presentation, 2026 Jun 5.
2. Shelby County Health Department, *HIV allocative efficiency modeling in Memphis, biannual workshop*, Onsite Presentation, 2025 Nov 13.
3. Shelby County Health Department, *HIV allocative efficiency modeling in Memphis, biannual workshop*, Onsite presentation, 2025 May 22.
4. Shelby County Health Department, *Introduction to HIV intervention prioritization in Memphis*, Onsite Presentation, 2025 Feb 13.
5. Eswatini Ministry of Health, *Allocative efficiency modeling for Eswatini to meet EHE 2030 goals*, Online Presentation, 2023 May 10.
6. Zimbabwe Ministry of Health and Child Care, *Allocative efficiency modeling for Zimbabwe to meet EHE 2030 goals*, Online Presentation, 2023 Mar 29.
7. KwaZulu-Natal Department of Health, *Allocative efficiency modeling for Kwazuku-Natal to meet EHE 2030 goals*, Online Presentation, 2023 Mar 21.
8. 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	<b>Distinguished Service Award</b> , New York City Department of Health	2021
	<b>Benjamin Franklin Fellowship</b> , University of Pennsylvania	2016
	<b>Top 350</b> , Putnam Competition	2013
	<b>Distinguished Honor Roll</b> , American Mathematics Competition 10/12 • <i>Additionally qualified for USAMO, but could not participate as an international</i>	2011
	<b>Perfect Score</b> , American Mathematics Competition 8	2008
TEACHING	<b>Tutoring Service of New York</b>	2021 – 2025
	<i>Subjects: Mathematics, Statistics, Physics.</i>	
	<b>Directed Reading Program, University of Pennsylvania</b>	2020 – 2021
	<i>Alex Kalbach, Spring 2021. Topic: The Fifteen Theorem.</i>	
	<i>Mihal Zelenin, Fall 2020. Topic: Traffic Flow Modeling and Car Accident Risk.</i>	
<i>Esther Guan, Spring 2020. Topic: Cryptosystems.</i>		
<b>Graduate Student Instructor, University of Pennsylvania</b>	2019	
<i>MATH 240 (Calculus III), Summer 2019.</i>		
<b>Teaching Assistant, University of Pennsylvania</b>	2017 – 2021	
<i>MATH 603 (Algebra), Spring 2021.</i>		
<i>AMCS 602 (Applied Algebra), Fall 2020.</i>		
<i>MATH 241 (Calculus IV), Spring 2019.</i>		
<i>MATH 420 (Ordinary Differential Equations), Fall 2018.</i>		
<i>MATH 240 (Calculus III), Spring 2018.</i>		
<i>MATH 371 (Algebra), Fall 2017.</i>		
<i>MATH 110 (Calculus for Wharton Students), Fall 2017.</i>		
<i>High School Summer Mathematics Academy, Summer 2017.</i>		
OTHERS	<b>Citizenship:</b> Taiwan	
	<b>Permanent Residence:</b> USA	
	<b>Music:</b> Fellowship of Trinity College London in Piano Performance	