

Anthony Chow

Department of Astronomy, Columbia University
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Research Interests

I am broadly interested in using simulations to study astrophysical structures and phenomena. My work in astrophysics focuses on magnitude gaps between 1st and 2nd brightest galaxies, 3D massive elliptical galaxy simulation, origins of fast radio bursts.

Education

<i>PhD student in Astrophysics</i> Columbia University in the City of New York	Sep. 2020 - May 2025
<i>Bachelor of Arts in Astrophysics</i> Columbia University in the City of New York	Sep. 2016 - May 2020
<i>DPhil Candidate in Statistics</i> University of Oxford	Oct. 2002 - Jun 2005
<i>Master of Science in Communications and Signal Processing</i> Imperial College London	Oct 1992 - Sep 1993
<i>Bachelor of Engineering in Computer Engineering</i> City University of Hong Kong	Oct 1989 - Jun 1992

Awards and Honors

Dean's Fellowship, Columbia Graduate School of Arts and Sciences	2020
Summa cum Laude, Columbia University	2020
Physics Departmental Honors, Columbia University	2020
Phi Beta Kappa Honor Society	2020
Bell-Burnell Summer Research Fellowship, Columbia University	2019
Hettena Scholarship, Columbia University	2017 - 2020
Dean's list, Columbia University	2016 - 2020
Columbia GS Honor Society, Columbia University	2018

Publications

Jeremiah P. Ostriker, Ena Choi, **Anthony Chow**, Kundan Guha, "*Mind the Gap: Is The Too Big To Fail Problem Resolved?*" *ApJ*, 885, 97

Research Experiences

<i>3-D circumnuclear disk simulation in massive elliptical galaxy</i> Bell-Burnell Summer Research Fellow, Columbia University Mentored by Professor Jeremiah Ostriker	Jun 2019 - Present
<ul style="list-style-type: none">• Building high resolution 3-D massive elliptical galaxy from scratch using Athena++• Enabled self-gravity and adding radiative cooling• Aiming to produce gravitational spiral waves in circumnuclear disk	
<i>The mystery of Fast Radio Burst (FRB)</i> Bell-Burnell Summer Research Fellow, Columbia University Mentored by Professor Lorenzo Sironi	Jun 2019 - Sep 2019

- Exploratory investigation of maser instability as a source of FRBs
- Running particle-in-cell plasma simulations on different plasma configurations to see if the emission from instability match the signatures of FRBs

Tremaine-Richstone statistics on EAGLE simulation dataset

May 2018 - Aug 2018

Research Assistant, Columbia University

Mentored by Professor Jeremiah Ostriker

- Analyzed the first and second brightest galaxies (M1 and M2) in EAGLE cosmological simulation
- Computed the Tremaine-Richstone statistics from different EAGLE models to understand the causes of small M1 spreads and large M1-M2 gaps
- Results are accepted for publication in the Astrophysical Journal

Teaching Experience

Part-time lecturer

Sep. 2013 - Jan 2015

City University of Hong Kong

- MA5621 Mathematical Methods for Finance and Actuarial Science
 - Graduate course for a class of 53 students from Department of Mathematics
 - Course leader - designed syllabus, assignments, examination and conducted lectures
 - Course contents: measure theory, continuous-time finance, martingale pricing.
- GE1327 Navigating Risk
 - Undergraduate course for 3 classes of total 151 students
 - Course leader - designed syllabus, assignments, examination and conducted lectures
 - Course contents: basic probability theory, portfolio risk, excel-based monte carlo simulation.

Work Experience

Director and Quantitative Strategist

Jul 2005 - Sep 2016

Credit Suisse, Fixed Income Trading, Hong Kong

- Oversaw interest rate, FX and credit derivatives modeling in Asian emerging market
- Approved mathematical modeling of all derivative products with potentially large P&L impact
- Developed more than 15 numerical pricing models for trading and risk management, using parallel grid-based PDE, Monte-Carlo simulation, Copula-based numerical integration etc
- Delivered approximate pricing solutions for structured products with extremely complex payoff functions

Skills

- Programming languages: Python, F#, C++
- Operating systems: Mac OS, Windows
- Software: LaTeX