Ho Sang (Leon) Chan

Curriculum Vitae

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Research Statement

I am an astrophysicists interest in a wide range of high-energy astrophysics problems, including but not limited to black holes, accretion discs, collapsars, supernoave, compact objects, and particle dark matter. To address these problems, I performed numerical simulations, and sometimes semi-analytical calculations. I also developed my own numerical tools to solve complicated astrophysical fluid dynamic problems

Education

University of Colorado — Boulder, Colorado
Doctor of Philosophy in Astrophysics — *08/2023 – Present*
Major GPA: 4.000/4.000

The Chinese University of Hong Kong — Shatin, Hong Kong
Master of Philosophy in Physics — *09/2019 – 03/2022*
Major GPA: 3.869/4.000

The Chinese University of Hong Kong — Shatin, Hong Kong
Bachelor of Science in Physics, ***First Class Honours*** — *08/2015 – 07/2019*
Major GPA: 3.859/4.000

Publications

Article in Preperation

Chan, H. S. et al. (2023). *The 230 GHz light curves variability of GRMHD models of Sagittarius A*.* In preparation.

Chan, H. S. et al. (2023). *Deep Learning in Steel Wire Rope Fault Diagnosis.* In preparation.

Journal Publications

Chan, H. S., Chu, M. C., & Leung, S. C. (2022). *Accretion-induced Collapse of Dark Matter-admixed Rotating White Dwarfs: Dynamics and Gravitational-wave Signals.* Accepted for Publication in The Astrophysical Journal.

Chan, H. S., Chu, M. C., & Leung, S. C. (2022). *Dark Matter-admixed Rotating White Dwarfs as Peculiar Compact Objects.* The Astrophysical Journal, 941(2), 115.

Chan, H. S. (2022). *On The Effects of Sub-GeV Dark Matter Particles to White Dwarfs and Thermonuclear Supernovae.* Master of Philosophy dissertation. The Chinese University of Hong Kong.

Chan, H. S., Villar, A., Cheung, S. H., Ho, S., O'Grady, A. J., Drout, M. R., & Renzo, M. (2022). *Searching for Anomalies in the ZTF Catalog of Periodic Variable Stars.* The Astrophysical Journal, 932(2), 118.

Cheung, S. H., Villar, V.A., **Chan, H. S.**, & Ho, S. (2021). *A New Classification Model for the ZTF Catalog of Periodic Variable Stars.* Research Notes of the AAS, 5(12), 282.

Chan, H. S., Chu, M. C., Leung, S. C., & Lin, L. M. (2021). *Delayed Detonation Thermonuclear Supernovae with an Extended Dark Matter Component.* The Astrophysical Journal, 914(2), 138.

Conference Proceedings

Chan, H. S., Cheung, S. H., Villar, A., & Ho, S. (2021). *A Convolutional Autoencoder-Based Pipeline for Anomaly Detection and Classification of Periodic Variable Stars.* NeurIPS 2021 Machine Learning and the Physical Sciences Workshop.

Chan, H. S., Cheung, S. H., Villar, A., & Ho, S. (2021). *Searching for the Weirdest Stars: A Convolutional Autoencoder-Based Pipeline for Detecting Anomalous Periodic Variable Stars.* NeurIPS 2021 Deep Generative Models and Downstream Applications Workshop.

Conference Contributions and Talks

240th American Astronomy Society Meeting Pasadena, CA
Virtual Oral Presentation *06/2022*

- Title: Searching for Anomalies in the ZTF Catalog of Periodic Variable Stars

Astronomy Journal Club, the Chinese University of Hong Kong Shatin, Hong Kong
Oral Presentation *03/2022*

- Title: Searching for Anomalies in the ZTF Catalog of Periodic Variable Stars

NeurIPS 2021 D.G.M.S. and D.A. Workshop Virtually
Poster Presentation *12/2021*

- Title: Searching for the Weirdest Stars: A Convolutional Autoencoder-Based Pipeline for Detecting Anomalous Periodic Variable Stars

NeurIPS 2021 M.L. and the Physical Science Workshop Virtually
Poster Presentation *12/2021*

- Title: A Convolutional Autoencoder-Based Pipeline for Anomaly Detection and Classification of Periodic Variables

Astroinformatics 2021 Conference Virtually
Poster Presentation *11/2021*

- Title: Searching for Anomalies in the ZTF Catalog of Periodic Variable Stars

Seminar Tea-Talk, California Institute of Technology Pasadena, CA
Oral Presentation *10/2021*

- Title: Exploding Dark Matter-Admixed White Dwarfs - An Alternative Explanation for Peculiar Supernovae?

238th American Astronomy Society Meeting Virtually
Oral Presentation *06/2021*

- Title: Delayed Detonation Thermonuclear Supernovae with an Extended Dark Matter Component

Research Seminar (Pizza Meeting), California Institute of Technology Pasadena, CA
Virtual Oral Presentation *04/2021*

- Title: Delayed Detonation Thermonuclear Supernovae with an Extended Component of Dark Matter

CUHK Physics Student Conference 2019 Shatin, Hong Kong
Oral Presentation *09/2019*

- Title: Dark Matter-Admixed White Dwarfs and their Thermonuclear Explosion An Alternative Probe to Astronomical Dark Matter

Fellowships

Croucher Scholarships for Doctoral Study	2023 - 2026
C.U. Boulder Department of Astrophysical and Planetary Sciences Fellowship	2023 - 2024
University of Colorado Boulder Department of Physics Fellowship (declined)	2023 - 2024
University of Colorado Boulder Chair's Fellowship (declined)	2023 - 2024
Master of Philosophy Postgraduate Studentship	2019 - 2022

Awards

C.W. Chu College's Foundation Scholarship	2018 - 2019
Dean's Honours List	2018 - 2019
Undergraduate Research Experience Grant	2017 - 2018
C.W. Chu College's Physics Scholarship	2017 - 2018
Dean's Honours List	2017 - 2018
Undergraduate Research Experience Grant	2016 - 2017
C.W. Chu College's Physics Scholarship	2016 - 2017
Dean's Honours List	2016 - 2017
Undergraduate Research Experience Grant	2015 - 2016
C.W. Chu College's Lee Wai Wing Scholarship	2015 - 2016
Department of Physics Admission Scholarships	2015 - 2016
Honours at Entrance	2015 - 2016

Skills

Programming: C, C++, Java, Python, Fortran, Latex, MySQL, Unix

Software: Git, VS Code, JetBrains PyCharm, TeX Studio, Matlab

Languages: Cantonese (Native), English (Fluent), Mandarin (Fluent)