

Sihao Cheng (程思浩)

Curriculum Vitae / Mar, 2021

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EDUCATION

Ph.D. & M.A., Physics and Astronomy <i>Johns Hopkins University</i> , United States advisor: Brice Ménard	2017–2021 (expected)
B.Sc. (with Honors), Astronomy <i>Peking University</i> , China advisor: Eric W. Peng	2012–2016

RESEARCH INTEREST

Extracting physical information from large data set with statistical methods
Astrophysical topics including observational cosmology, stellar physics, and extrasolar planets

AWARDS

2020 Outstanding Publication in Astrostatistics Award (student category)	Jan 2021
IAU travel grant for Symposium No.357	Oct 2019
Lin-Qiao Prize for Undergraduate Research	Sept 2015
Wu-Si Scholarship	May 2015, May 2014

PUBLICATIONS

[Weak lensing scattering transform: dark energy and neutrino mass sensitivity](#)

Visualised what the scattering transform sees from a lensing mass map, and emphasised its advantage of having Gaussian likelihood

Sihao Cheng and Brice Ménard
2021, arXiv:2103.09247

[A new approach to observational cosmology using the scattering transform](#)

Introduced a new statistic inspired by convolutional neural nets to observational cosmology, and demonstrated that it outperforms classic estimators

Sihao Cheng, Yuan-Sen Ting, Brice Ménard, and Joan Bruna
2020, *MNRAS*, 499, 5902

[An Increase in Small-planet Occurrence with Metallicity for Late-type Dwarf Stars in the Kepler Field and Its Implications for Planet Formation](#)

Cicero X. Lu, Kevin C. Schlaufman, and **Sihao Cheng**
2020, *AJ*, 160, 253

[Multi-Gigayear White Dwarf Cooling Delays from Clustering-Enhanced Gravitational Sedimentation](#)

Evan B. Bauer, Josiah Schwab, Lars Bildsten, and **Sihao Cheng**
2020, *ApJ*, 902, 93

[Forever young white dwarfs: when stellar ageing stops](#)

María E. Camisassa, Leandro G. Althaus, Santiago Torres, Alejandro H. Córscico, **Sihao Cheng**, Alberto Rebassa-Mansergas
2020, arXiv:2008.03028

[A Gravitational Redshift Measurement of the White Dwarf Mass–Radius Relation](#)

Used populational gravitational redshift to probe the white dwarf mass–radius relation over a wide mass range
Vedant Chandra, Hsiang-Chih Hwang, Nadia L. Zakamska, and **Sihao Cheng**
2020, *ApJ*, 899, 146

[Carbon star formation as seen through the non-monotonic initial–final mass relation](#)

Marigo, P. **et al.**
2020, *Nature Astronomy*

[Double White Dwarf Merger Products among High-mass White Dwarfs](#)

Measured the white dwarf merger rate with unprecedented high precision using a novel kinematic method
Sihao Cheng, Jeffrey D. Cummings, Brice Ménard, and Silvia Toonen
2020, *ApJ*, 891, 160

[Two delays in white dwarf evolution revealed by *Gaia*](#)

Sihao Cheng
2019, *Proceedings of IAU*, 15 (S357), 175

[A Cooling Anomaly of High-mass White Dwarfs](#)

Discovered an unexpected, extremely long cooling delay in a population of white dwarfs using *Gaia* data
Sihao Cheng, Jeffrey D. Cummings, and Brice Ménard
2019, *ApJ*, 886, 100

[Meteor spectral observation with DSLR, normal lens and prism](#)

Sihao Cheng and Simiao Cheng
2011, *JIMO*, 39, 39

TALKS & PRESENTATIONS

Invited Talk , <i>White Dwarfs from Physics to Astrophysics</i> , KITP (online)	Mar 2021
Lunch talk at Peking University, online	Mar 2021
Seminar at Tsinghua University, online	Mar 2021
Cosmology seminar at IPMU, online	Jan 2021
Cosmology seminar at IAP, online	Dec 2020
Lunch talk at University of Virginia/NRAO, online	Nov 2020
Cosmology/machine learning journal club at Fermilab, online	Oct 2020
Seminar at DIRAC, University of Washington, online	Oct 2020
(invited) Cosmology seminar at Duke University, online	Oct 2020
Seminar at Columbia University, online	Oct 2020
Astrophysics and Cosmology Seminar at University of Arizona, online	Sep 2020
Cosmology journal club at University of Oxford, online	Sep 2020
Astrocoffee at Weizmann Institute of Science, online	Aug 2020
Contributed Talk, <i>Cosmology from Home</i> , online	Aug 2020
Astrophysics/Cosmology Seminar at University of Sussex, online	July 2020
Lunch Seminar at Indiana University, Bloomington, IN	Mar 2020
CTC seminar at University of Maryland, College Park, MD	Mar 2020
Thunch seminar at Princeton University and astro-coffee at IAS, Princeton, NJ	Feb 2020
A special seminar at Boston University, Boston, MA	Feb 2020
(invited) The Stars & Planets Seminar at Harvard-Smithsonian CfA, Cambridge, MA	Feb 2020
Contributed Talk, <i>White Dwarfs as Probes of Fundamental Physics and Tracers of Planetary, Stellar, and Galactic Evolution</i> , Hilo, HI (IAU grant awarded for travel)	Oct 2019
Contributed Talk, <i>The Beginnings and Ends of Double White Dwarfs</i> , Copenhagen, Denmark (grant awarded for travel)	July 2019
Poster: 2019 STScI Spring Symposium: <i>The Deaths and Afterlives of Stars</i> , Baltimore, MD	Apr 2019

TEACHING EXPERIENCE

Teaching assistant, Johns Hopkins University, Stars & the Universe	2019
Teaching assistant, Johns Hopkins University, Physics I & II	2017–2018

REFERENCES

Prof. Brice Ménard	menard@jhu.edu
Associate Professor, Johns Hopkins University	1-443-345-6791
Dr. Yuan-Sen Ting	ting@ias.edu
Assistant professor (starting from Dec 2021), Australian National University	
Prof. Nadia L. Zakamska	zakamska@jhu.edu
Associate Professor, Johns Hopkins University	1-410-516-6657