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Joel ONG Jia Mian
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Curriculum Vitæ

Education

- 2016–present **Yale University**, *Ph.D. in Astronomy*, in progress, anticipated Summer 2022.
- M.Sc. and M.Phil. en route to Ph.D., 2018
 - PhD Thesis: Stellar Surfaces in the Time Domain
 - Advisor: Prof. Sarbani BASU
- 2012–2016 **National University of Singapore (NUS)**, *B.Sc. (Hons) in Physics*.
- Highest Distinction (First-Class Honours equivalent)
 - Honours Thesis: Fermi-Walker Transport and EPR Correlation Experiments on Second-Order Tangent Bundles
 - Advisor: Assoc. Prof. Kuldip SINGH
- 2004–2009 **Hwa Chong Institution (HCI)**, *Singapore-Cambridge GCSE A-Levels (Integrated Programme)*.

Research Positions

- 2016–present **Graduate Research Assistant**, *Astronomy Dept.*, Yale University.
- Basu Group: various projects in both theoretical and observational asteroseismology
 - Fischer Group: data reduction, calibration, velocimetry software for the EXTreme PREcision Spectrograph (EXPRES)
- Summer 2014 **Research Intern**, *Defence Medical & Environmental Research Institute (DMERI)*, DSO National Laboratories. Numerical simulations for various dissipation and transport phenomena (project classified).
Advisor: Dr. MUN Cheok Hong
- 2012–2013 **Undergraduate Researcher**, *Special Programme in Science*, NUS. Numerical raytracing and optical design for astronomical instrumentation.
Advisor: Dr. Abel YANG Jiahui

Grants, Fellowships and Awards

- 2020 Tinsley Award for Best 2019 Student Paper, *Astronomy Dept.*, Yale
- 2019, 2020 Dean's Fund for Research Workshops, Seminars and Colloquia, Yale (US\$1000, for organising the Yale Exoplanet Seminar)
- 2019 TESS Guest Investigator Cycle 2, NASA (US\$50,000, PI: D. Fischer; Co-Is: J. Ong, R. Roettenbacher; G022092 "Contemporaneous Photometric/Spectroscopic Characterisation of Stellar Surfaces")
- 2018-2019 Henry A. Smith Fellowship in Astronomy, Yale
- 2017 Singapore National Academy of Science Award (Physics)
- 2016 Institute of Physics Singapore Medal
- 2012–2016 Dean's List, *Faculty of Science*, NUS
- Fall 2015 Senior Honour Roll, *University Scholars Programme*, NUS
- 2013–2015 Jurong Shipyard Book Prize (Physics)
- 2015 Diamond Jubilee Student Exchange Award, *Faculty of Science*, NUS
- 2014 Arthur Rajaratnam Prize in Experimental Physics, *Faculty of Science*, NUS
- 2011–2016 NUS Undergraduate (Merit) Scholarship

Publications

Metrics $h = 8$ on 21 abstracts with 220 citations (via NASA ADS)

Erdős Number 4 (Erdős Pál → D. Frank Hsu → Bruce M. Maggs → Gregory P. Laughlin → JOJM)

1st-3rd Author Publications

9. Ong, J. M. J., Basu, S., Lund, M. N., et al. accepted to ApJ. arXiv: 2108.07370, *Mixed Modes and Asteroseismic Surface Effects: II. Subgiant Systematics*
8. Ong, J. M. J., Basu, S., & Roxburgh, I. W. 2021, *ApJ*, 920, 8. arXiv: 2107.03405, *Mixed Modes and Asteroseismic Surface Effects: I. Analytic Treatment*
7. Ong, J. M. J., Basu, S., & McKeever, J. M. 2021, *ApJ*, 906, 54. arXiv: 2011.01957,

6. Ong, J. M. J., & Basu, S. 2020, *ApJ*, 898, 127. arXiv: 2006.13313, *Semianalytic Expressions for the Isolation and Coupling of Mixed Modes*
5. Petersburg, R. R., Ong, J. M. J., Zhao, L. L., et al. 2020, *AJ*, 159, 187. arXiv: 2003.08851, *An Extreme-Precision Radial-Velocity Pipeline: First Radial Velocities from EXPRES*
4. Ong, J. M. J., & Basu, S. 2019, *ApJ*, 885, 26. arXiv: 1909.02580, *Structural and Evolutionary Diagnostics from Asteroseismic Phase Functions*
3. Blackman, R. T., Ong, J. M. J., & Fischer, D. A. 2019, *AJ*, 158, 40. arXiv: 1906.01653, *The Measured Impact of Chromatic Atmospheric Effects on Barycentric Corrections: Results from EXPRES*
2. Ong, J. M. J., & Basu, S. 2019, *ApJ*, 870, 41. arXiv: 1811.06996, *Explaining Deviations from the Scaling Relationship of the Large Frequency Separation*
1. Viani, L. S., Basu, S., Ong, J. M. J., Bonaca, A., & Chaplin, W. J. 2018, *ApJ*, 858, 28. arXiv: 1803.05924, *Investigating the Metallicity-Mixing-length Relation*

Other Co-authored Publications

12. Huber, D., White, T. R., Metcalfe, T. S., et al. 2021, accepted to *AJ*. arXiv: 2108.09109, *A 20-Second Cadence View of Solar-Type Stars and Their Planets with TESS: Asteroseismology of Solar Analogs and a Re-characterization of π Men c*
11. Cunha, M. S., Roxburgh, I. W., Aguirre Børsen-Koch, V., et al. 2021, accepted to *MNRAS*. arXiv: 2110.03332, *PLATO Hare-and-Hounds exercise: Asteroseismic model fitting of main-sequence solar-like pulsators*
10. Hill, M. L., Kane, S. R., Campante, T. L., et al. accepted to *AJ*. arXiv: 2107.13583, *Asteroseismology of ι Draconis and Discovery of an Additional Long-Period Companion*
9. Chontos, A., Huber, D., Kjeldsen, H., et al. accepted to *ApJ*. arXiv: 2012.10797, *TESS Asteroseismology of α Mensae: Benchmark Ages for a G7 Dwarf and its M-dwarf Companion*
8. Lillo-Box, J., Ribas, Á., Montesinos, B., et al. 2021, *A&A*, 653, A40. arXiv: 2106.05011, *Uncovering the ultimate planet impostor. An eclipsing brown dwarf in a hierarchical triple with two evolved stars*
7. Nielsen, M. B., Davies, G. R., Ball, W. H., et al. 2021, *AJ*, 161, 62. arXiv: 2012.00580, *PBjam: A Python Package for Automating Asteroseismology of Solar-like Oscillators*
6. Ball, W. H., Chaplin, W. J., Nielsen, M. B., et al. 2020, *MNRAS*, 499, 6084. arXiv: 2010.07323, *Robust asteroseismic properties of the bright planet host HD 38529*
5. Brewer, J. M., Fischer, D. A., Blackman, R. T., et al. 2020, *AJ*, 160, 67. arXiv: 2006.02303, *EXPRES I. HD 3651 as an Ideal RV Benchmark*
4. Jiang, C., Bedding, T. R., Stassun, K. G., et al. 2020, *ApJ*, 896, 65. arXiv: 2005.00272, *TESS Asteroseismic Analysis of the Known Exoplanet Host Star HD 222076*
3. Blackman, R. T., Fischer, D. A., Jurgenson, C. A., et al. 2020, *AJ*, 159, 238. arXiv: 2003.08852, *Performance Verification of the EXTreme PREcision Spectrograph*
2. Chaplin, W. J., Serenelli, A. M., Miglio, A., et al. 2020, *NatAs*, 4, 382. arXiv: 2001.04653, *Age Dating of an Early Milky Way Merger via Asteroseismology of the Naked-eye Star ν Indi*
1. Huber, D., Chaplin, W. J., Chontos, A., et al. 2019, *AJ*, 157, 245. arXiv: 1901.01643, *A Hot Saturn Orbiting an Oscillating Late Subgiant Discovered by TESS*

In Preparation

1. Ong, J. M. J., Roettenbacher, R. M., Henry, G. W., et al. in prep., *EXPRES IV: Imaging Stellar Surfaces with Contemporaneous Spectroscopy and Photometry*
2. Ong, J. M. J., Lund, M. N., Basu, S., et al. in prep., *Helium Abundances from Ensemble Asteroseismology of the TESS Southern Continuous Viewing Zone*
3. Ong, J. M. J., & Basu, S. in prep., *Asymmetric Rotational Splitting in Red Giant Mixed Modes*
4. Campante, T. L., Li, T., Ong, J. M. J., & Corsaro, E. in prep., *Detailed Asteroseismic Modeling of High-luminosity Red-giant Branch Stars: The Paradigmatic Cases of the Host Stars KOI-3886 and ι Draconis*

Others

1. Gaudi, S., Blackwood, G., Howard, A., et al. 2019, *Bulletin of the American Astronomical Society*, 51, 232, *Extreme Precision Radial Velocity Working Group*

Scientific Presentations

Seminars and Colloquia

- 01/2022 Monday Science Seminar, University of Wisconsin – Madison
- 12/2021 The Good Vibrations Seminar, LESIA, Paris Observatory
- 11/2021 Stars and Compact Objects, Centre for Computational Astrophysics
- 10/2021 Special Programme in Science Seminar, National University of Singapore
- 09/2021 Astronomy Department Seminar, American Museum of Natural History
- 02/2021 iSIMBA Seminar, Aarhus University

Conference Presentations

- 01/2022 *Stellar Surfaces in the Frequency Domain* (dissertation); AAS 239
- 11/2021 *Asteroseismology* (invited panellist); Transport in Stellar Interiors, KITP
- 08/2021 *Helium Abundances from Subgiant Ensemble Asteroseismology* (contributed); TESS SciCon II, MIT
- 07/2019 *Structural and Evolutionary Diagnostics from Asteroseismic Phase Functions* (contributed); TASC V, MIT
- 07/2018 *Deviations from the Scaling Relation of the Large Frequency Separation* (contributed); TASC IV, Aarhus

Posters

- 10/2021 *Mixed Modes and the Asteroseismic Surface Term*; PLATO Conference 2021
- 08/2021 *Asteroseismology of the Red-giant Hosts KOI-3886 and ι Draconis*; Campante et al., TESS SciCon II
- 08/2021 *Red Giant Seismology: Seismic Signatures of Convective Overshoot*; Lindsay et al., TESS SciCon II
- 08/2019 *An EPRV Pipeline for EXPRES*; ERES V
- 01/2019 *PSF Modelling and Spectro-perfectionism for RV Spectrographs*; Petersburg et al., AAS 233
- 01/2019 *The Measured Impact of Chromatic Atmospheric Effects on Barycentric Corrections: Results from EXPRES*; Blackman et al., AAS 233
- 08/2018 *Diagnosing PPNU with a Laser Frequency Comb on EXPRES*; ERES IV
- 08/2017 *Effects of PPNU on Extreme Precision Wavelength Calibration with a LFC*; EPRV III and ERES III

Outreach Talks

- 2020 “Hearing Stars Like the Sun” – Astronomy On Tap New Haven
- 2019 “On the Discovery of Exoplanets” – Hwa Chong Institution, Singapore

Observing Experience

- 2019 Lowell Discovery Telescope (LDT, 4.3 m) with EXPRES

Teaching Experience

- Fall 2020, 2018 **ASTR 550, Stellar Astrophysics**, Yale.
(graduate class) lectures, programming tutorials, and office hours, taught by Sarbani Basu
- Summer 2020 **ASTR S120, Galaxies in the Universe**, Yale.
grading and discussion sections, taught by Robert Zinn
- Fall 2019 **ASTR 210, Stars and their Evolution**, Yale.
grading and office hours, taught by Sarbani Basu
- Spring 2018 **ASTR 180, Introduction to Relativity**, Yale.
grading and office hours, taught by Charles Bailyn
- Fall 2017 **ASTR 255, Research Methods: Astrophysics**, Yale.
grading, programming tutorials (Python 3), and office hours, taught by Marla Geha
- Spring 2017 **ASTR 160, Frontiers and Controversies in Astrophysics**, Yale.
grading, discussion sections, and homework help, taught by Marla Geha
- Fall 2016 **ASTR 130, Origins and the Search for Life in the Universe**, Yale.
grading, discussion sections, and homework help, taught by Debra Fischer
- Spring 2016 **SP3176, The Universe**, *Special Programme in Science*, NUS.
discussion sections, taught by Dr. Lim Zhi Han.

- Fall 2015 **SP2174, Atoms to Molecules**, *Special Programme in Science*, NUS.
laboratory teaching and discussion sections, taught by Dr. Chammika Udalagama.
- Fall 2015 **PC1142, Physics II**, *Laboratory Assistant*, NUS.
laboratory teaching and grading duties.

Research Supervision

Yale David Saunders (undergraduate, Fall 2020–); Chris Lindsay (Masters, Spring 2021–)

Service and Other Activities

Professional Service

- 2020– **Yale Stellar Astrophysics Journal Club**, *Organiser*.
- 2019– **Reviewer**, *A&A*, *YURJ*.
- 2018–2021 **Yale Exoplanet Seminar**, *Co-organiser*.
- 2020–2021 **Telescope Time Allocation Committee**, *Graduate Student Representative*, Yale Astronomy Dept.
- 2017 **ERES III**, *Scientific and Local Organising Committee*.

Institutional Service and Outreach

- 2018–present **Astronomy on Tap New Haven**, *Volunteer Treasurer and Presenter*.
- 2016–present **Ezra Stiles College**, *Graduate Affiliate*.
- 2018–2021 **Yale Astronomy Sibs**, *Co-founder, Organiser, and Mentor*.
- 2016–2019 **Leitner Family Observatory and Planetarium**, *Student Presenter*.
- 2017–2018 **Graduate Student Assembly**, *Department Representative*.
- 2015–2016 **University Scholars Programme, NUS**, *USP Peer Mentor*.
- 2014–2015 **NUS Astronomical Society**, *Academic Consultant*, NUS.
- 2015 **YHack CodeBlue**, *Student Instructor*, Yale University.
- 2014 **Asian Physics Olympiad 2014**, *Academic Committee Liaison*, Singapore.
- 2012 **International Biology Olympiad 2012**, *Team Liaison*, Singapore.

Military Service

- 2015–2016 **Singapore Armed Forces**, *Armoured Reconnaissance Trooper (Reservist)*.
- 2010–2012 **Singapore Armed Forces**, *Armoured Reconnaissance Trooper (Full-time National Service)*.