

Alexander P. Ji

aji@carnegiescience.edu

EDUCATION AND APPOINTMENTS

Hubble Fellow , Observatories of the Carnegie Institution of Washington	Aug 2017 - Present
Ph. D. Physics , Massachusetts Institute of Technology Advised by Anna Frebel, Astrophysics division	Sep 2012 - Jun 2017
M.S. Statistics , Stanford University Focus on Applied Statistics and Machine Learning	Jun 2012
B. S. Physics , Stanford University Minor in Computer Science	Jun 2011

HONORS AND AWARDS

Hubble Fellowship	2017-2020
Martin Deutsch Award for Excellence in Experimental Physics, MIT	Sep 2016
Young Scientist at 66th Lindau Nobel Laureate Meeting, Germany	Jun 2016
Best Poster Prize, Nuclei in the Cosmos XIV, Japan	Jun 2016
Henry Kendall Teaching Award, MIT	Sep 2014
Whiteman Fellow, MIT	Sep 2012 - Aug 2013
Outstanding Learning Assistant, American Association of Physics Teachers	Jun 2012
Stanford Alumni Award of Excellence	Jun 2011
Stanford Physics Undergraduate Commencement Speaker	Jun 2011
MIT Kavli Institute Travel Grant	Apr 2017, May 2015
MIT Graduate Student Council Travel Grant	Jun 2016
APS DAP Graduate Student Travel Grant	Apr 2016

TALKS AND POSTERS

Colloquium U. Virginia (Joint Physics/Astronomy)	Feb 2018
Invited Seminar “A rare and prolific r-process event in Reticulum II”, CCAPP/OSU	Oct 2016
Highlight Talk “Dwarf galaxy archaeology with Reticulum II”, First Stars V, Germany	Aug 2016
Invited Talk “A single prolific r-process event preserved in an ultra-faint dwarf galaxy”, American Physical Society Hot Topics Session, April Meeting	Apr 2016
Colloquium “A rare and prolific r-process event in Reticulum II”, University of Toledo	Jan 2016
Talk “A jet-like explosion of a first star” (for A. Frebel at GMT Science Meeting)	Sep 2017
Talk “Homogeneous Abundances in Ultra-faint Dwarf Galaxies”, JINA Forging Connections	Jun 2017
Talk “Dwarf galaxy archaeology with Reticulum II”, The Galactic Renaissance	Feb 2017
Seminars “Dwarf galaxy archaeology with Reticulum II”, 5 talks At Caltech Tea, CfA ITC Lunch, UCSC FLASH, Yale Galaxy Lunch, Carnegie Lunch	Sep-Nov 2016
Seminar “A rare and prolific r-process event in Reticulum II”, KIPAC/Stanford Tea	Aug 2016
Seminar “A rare and prolific r-process event in Reticulum II”, Tufts Astro Lunch	Apr 2016
Talk “Forming the oldest stars”, MIT Physics Lunch	Apr 2013
Local Seminars MIT Kavli Institute Journal Club, Grad Lunch, Code Coffee (15+ talks)	
Poster “Stellar Abundances in Ultra-faint Dwarf Galaxies”, GMT Science Meeting	Sep 2017
Poster “A rare and prolific r-process event in Reticulum II”, Nuclei in the Cosmos XIV	Jun 2016
Poster “Satellite Planes in Caterpillar”, Local Group Astrostatistics Conf, U Michigan	Jun 2015
Poster “Testing early star formation”, Near-Field Far-Field Conf, UC Irvine	Feb 2014

TEACHING

Workshop	Carnegie, Scientific Writing Workshop for Undergraduates (with J. Teske)	2017
Teaching Assistant	MIT, 8.282/8.284: Intro to Astronomy/Modern Astrophysics	2014/2016/2017
Head Teaching Assistant	Stanford, Physics 25/26: Modern Physics	2012
Teaching Assistant	Stanford, Physics 63: Electricity, Magnetism, and Waves	2012
Teaching Assistant*	Stanford, Physics 62: Classical Mechanics Laboratory	2010/2011
Instructor*	Stanford, Physics 91SI: Practical Computing for Scientists	2011
Teaching Assistant	Stanford, Physics 24: Electricity and Optics Laboratory	2011
Resident Tutor	Stanford CTL, Math, science, and engineering tutoring	2009 - 2010
Section Leader	Stanford, CS 106A/B: Programming Methods/Abstractions	2008 - 2009

* Led or assisted in curriculum development

LEADERSHIP EXPERIENCE

Galaxy Discussion Group Coordinator	MIT Kavli Institute	Sep 2014 - Mar 2017
Journal Club Coordinator	MIT Kavli Institute	Sep 2013 - Sep 2015
Student Social Coordinator	MIT Physics Graduate Student Council	Sep 2014 - Sep 2015
Lunch Talk Coordinator	MIT Physics Graduate Student Council	Sep 2013 - Sep 2014
President	Stanford Society of Physics Students	Sep 2010 - Jun 2011
Secretary	Stanford Society of Physics Students	Sep 2007 - Jun 2009
Music Director	Stanford Side by Side	Sep 2009 - Jun 2010
Dormitory Staff	Stanford Florence Moore Hall	Sep 2009 - Jun 2010

OUTREACH AND SERVICE

Referee	for ApJ, MNRAS, A&A	
Mentor	for high school and undergraduate students	
Public Talk	“Glimpses of the Cosmic Dawn”, Carnegie Lunch with an Astronomer	Nov 2017
Public Talk	“Searching for the First Stars”, Carnegie Open House	Oct 2017
Public Talk	“Glimpses of the Cosmic Dawn”, Whitin Observatory at Wellesley	Apr 2017
Public Talk	“The First Stars”, MIT IAP	Jan 2017
Einstein in the Classroom Instructor	Cambridge Science Festival	Apr 2015
Science by the Pint	public outreach with Harvard Science in the News	Apr 2015
Public Talk	“The First Stars”, MIT IAP	Jan 2015
Public Talk	“The Universe in a Box”, MIT IAP	Jan 2014
Science Outreach	Taught courses at SPLASH, Exploring New Worlds, etc.	Sep 2007 - Jun 2011

TELESCOPE AND COMPUTING ALLOCATIONS

Magellan/MIKE	High-resolution spectroscopy, 17 nights (PI and Co-PI)
Magellan/M2FS	Multi-object spectroscopy, 2 nights (PI)
VLT/FLAMES	Multi-object spectroscopy, 1.6 nights (PI)
Gemini/GRACES	High-resolution spectroscopy, 1 night (PI)
Hubble/ACS	12 orbits (Co-I)
XSEDE/Stampede, Comet	~10 million CPU hours (Associated student)

PRIMARY AUTHOR PUBLICATIONS

First-author papers, or papers where I performed a significant part of analysis and writing.

11. **Ji, A. P.** & Frebel, A. *From Actinides to Zinc: Using the full abundance pattern of the brightest star in Reticulum II to distinguish between different r-process sites*, accepted to ApJ 2018 (arXiv:1802.07272)
10. Safarzadeh, M., **Ji, A. P.**, Dooley, G., Frebel, A., Scannapieco, E., Gomez, F., O'Shea, B. W. *Selecting ultra-faint dwarf candidate progenitors in cosmological N-body simulations at high redshifts*, accepted to MNRAS 2018 (arXiv:1712.03967)
9. Griffen, B. F., Dooley, G., **Ji, A. P.**, O'Shea, B. W., Gomez, F., Frebel, A., *Tracing the origin of the first stars and galaxies within the hierarchical assembly history of the Milky Way*, 2018, MNRAS, 474, 443
8. **Ji, A. P.**, Frebel, A., Ezzeddine, R., Casey, A. R. *Chemical Diversity in the Ultra-faint Dwarf Galaxy Tucana II*, 2016, ApJL, 832, 1
7. **Ji, A. P.**, Frebel, A., Simon, J. D., Chiti, A. *Complete element abundances of nine stars in the r-process galaxy Reticulum II*, 2016, ApJ, 830, 93
6. **Ji, A. P.**, Frebel, A., Chiti, A., Simon, J. D. *R-process enrichment from a single event in an ancient dwarf galaxy*, 2016, Nature, 531, 610
5. Griffen, B. F., **Ji, A. P.**, Dooley, G. A., Gomez, F. A., Vogelsberger, M., O'Shea, B. W., Frebel, A., *The Caterpillar Project: A Large Suite of Milky Way Sized Halos*, 2016, ApJ, 818, 10
4. **Ji, A. P.**, Frebel, A., Simon, J. D., Geha, M., *High-resolution spectroscopy of extremely metal-poor stars in the least evolved galaxies: Bootes II*, 2016, ApJ, 817, 41
3. Frebel, A., Chiti, A., **Ji, A. P.**, Jacobson, H. R., Placco, V. M., *SD 1313-0019 — another second generation star with $[Fe/H] = -5.0$, observed with the Magellan telescope*, 2015, ApJL, 810, 27
2. **Ji, A. P.**, Frebel, A., Bromm, V., *Preserving chemical signatures of primordial star formation in the first low-mass stars*, 2015, MNRAS, 454, 659
1. **Ji, A. P.**, Frebel, A., Bromm, V., *The chemical imprint of silicate dust on the most metal-poor stars*, 2014, ApJ, 782, 95

N-TH AUTHOR PUBLICATIONS

These are papers where I provided significant comments, telescope resources or other data, code or minor analysis, and/or other minor contributions.

7. Chiti, A., Frebel, A., **Ji, A. P.**, Jerjen, H., Kim, D., Norris, J. E., *Chemical Abundances of New Member Stars in the Tucana II Dwarf Galaxy*, accepted to ApJ 2018 (arXiv:1803.01808)
6. Li, T. S., Simon, J. D., ..., **Ji, A. P.**, ..., *Ships Passing in the Night: Spectroscopic Analysis of Two Ultra-Faint Satellites in the Constellation Carina*, submitted to ApJ (arXiv:1802.06810)
5. Hartwig, T., Yoshida, N., ..., **Ji, A. P.**, ..., *Descendants of the first stars: the distinct chemical signature of second generation stars*, submitted to MNRAS (arXiv:1801.05044)
4. Drout, M. R., Piro, A. L., ..., **Ji, A. P.**, ..., *Light Curves of the Neutron Star Merger GW170817/SSS17a: Implications for R-Process Nucleosynthesis*, 2017, Science, 358, 1570
3. Shappee, B. J., Simon, J. D., ..., **Ji, A. P.**, ..., *Early Spectra of the Gravitational Wave Source GW170817: Evolution of a Neutron Star Merger*, 2017, Science, 358, 1574
2. Placco, V. M., Holmbeck, E. M., ..., **Ji, A. P.**, ..., *RAVE J203843.2–002333: The first highly r-process enhanced star identified in the RAVE survey*, 2017, ApJ, 844, 18
1. Dooley, G., Griffen, B. F., Zukin, P., **Ji, A. P.**, Vogelsberger, M., Hernquist, L., Frebel, A., *The effects of varying cosmological parameters on halo substructure*, 2014, ApJ, 786, 50