

# Jinmi Yoon, Ph.D.

✉ Space Telescope Science Institute  
3700 San Martin Dr, Baltimore, MD 21218

## Curriculum Vitae

jinmi.yoon@gmail.com  
🌐 [jinmiyoon.github.io/](https://jinmiyoon.github.io/)  
ORCID: 0000-0002-4168-239X

### Education

- 2002 – 2008    ■ **Ph.D. Physics (Astrophysics)**  
Department of Physics and Astronomy, Stony Brook University, NY, USA  
Dissertation title: *Rotation and Evolution of A and F stars*  
Advisor: Prof. Deane M. Peterson
- 1999 – 2002    ■ **M.Sc. Physics**  
School of Physics, Seoul National University, Seoul, Republic of Korea  
Thesis title: *Closed string dynamics in tensor fields*
- 1995 – 1999    ■ **B.Sc. Physics**  
Department of Physics, University of Seoul, Seoul, Republic of Korea  
(graduated with a top honor and Dean's award for academic excellence)

### Employment/Appointment

- 2021 –    ■ **Senior Staff Astronomical Data Scientist**  
Space Telescope Science Institute, MD USA
- 2017 – 2020    ■ **JINA-CEE Postdoctoral Fellow**  
Department of Physics and Joint Institute for Nuclear Astrophysics-Center for the evolution of the elements, University of Notre Dame, IN USA
- 2015 – 2017    ■ **Postdoctoral Research Associate**  
Department of Physics and Joint Institute for Nuclear Astrophysics-Center for the evolution of the elements, University of Notre Dame, IN USA
- 2002–2008    ■ **Graduate Research and Teaching Assistant** Department of Physics and Astronomy, Stony Brook University, NY USA
- 2001–2002    ■ **Adjunct faculty (lecturer and lab instructor)**  
Department of Physics, University of Seoul, Seoul, Republic of Korea
- 1999–2001    ■ **Graduate Research and Teaching Assistant** School of Physics, Seoul National University, Seoul, Republic of Korea

### Awards/Honors/Achievements

- 2017–present    ■ JINA-CEE Postdoctoral Fellowship, University of Notre Dame
- 2016–present    ■ AAS Astronomy Ambassador program cohort, Astronomical Society of the Pacific (ASP) & American Astronomical Society (AAS)
- 2000 – 2001    ■ Brain Korea 21 scholarship, School of Physics, Seoul National University
- 1999    ■ Dean's award (from the College of Liberal Arts and Sciences) for academic excellence, University of Seoul
- Graduated with a top honor, the department of Physics, The University of Seoul

## Awards/Honors/Achievements (continued)

1995 – 1998    ■ Scholarship for academic excellence/top 3 highest class rank, the department of Physics, University of Seoul

## Research Interests

Galactic archaeology	■ The nature of the first-generation of stars through chemodynamical analysis of the most metal-poor stars, in particular, carbon-enhanced metal-poor (CEMP) stars in the Galactic halo and the ultra-faint dwarf galaxies
Near-field cosmology	■ Formation and evolution of galaxies in the early Universe
Galactic chemical evolution	■ Evolution of chemical elements throughout the Galactic assembly history, in particular, its early enrichment history
Nuclear astrophysics	■ Origin and evolution of elements and first-star nucleosynthesis (quiescent stellar burning processes and neutron-capture processes such as s-process, i-process, and r-process)
Stellar Astrophysics	■ Stellar evolution and (rapid) rotation of intermediate-mass and massive stars

## Research Publications

An inactive publication gap during 2011–2014 is due to an extended family leave.

Each article with citations can be also found at [my ADS library](#) and [my ORCID link](#).

\* Students I have mentored.

## First- and Second-Authored Peer Reviewed Journal Articles

1. Dietz, S. E., **Yoon, J.**, Beers, T. C., Placco, V. & Lee, Y. S. *Two Populations of Carbon-Enhanced Metal-Poor Stars in the Disk System of the Milky Way* Dec. 2020. arXiv: [2012.03463 \[astro-ph.GA\]](#).
2. Dietz\*, S. E., **Yoon, J.**, Beers, T. C. & Placco, V. M. *The Metallicity Gradient and Complex Formation History of the Outermost Halo of the Milky Way* May 2020. doi:[10.3847/1538-4357/ab7fa4](#). arXiv: [1911.11140 \[astro-ph.GA\]](#).
3. **Yoon, J.**, Whitten\*, D. D., Beers, T. C., Lee, Y. S., Masseron, T. & Placco, V. M. *Identification of a Group III CEMP-no Star in the Dwarf Spheroidal Galaxy Canes Venatici I* May 2020. doi:[10.3847/1538-4357/ab7daf](#). arXiv: [1910.10038 \[astro-ph.SR\]](#).
4. **Yoon, J.**, Beers, T. C., Tian\*, D. & Whitten\*, D. D. *Origin of the CEMP-no Group Morphology in the Milky Way*, *The Astrophysical Journal*, 878, 97 June 2019. doi:[10.3847/1538-4357/ab1ead](#). arXiv: [1904.02758 \[astro-ph.SR\]](#).
5. **Yoon, J.**, Beers, T. C., Dietz\*, S., Lee, Y. S., Placco, V. M., Da Costa, G., Keller, S., Owen, C. I. & Sharma, M. *Galactic Archeology with the AEGIS Survey: The Evolution of Carbon and Iron in the Galactic Halo*, *The Astrophysical Journal*, 861, 146, July 2018. doi:[10.3847/1538-4357/aacce](#). arXiv: [1806.04738 \[astro-ph.SR\]](#).
6. **Yoon, J.**, Beers, T. C., Placco, V. M., Rasmussen\*, K. C., Carollo, D., He, S., Hansen, T. T., Roederer, I. U. & Zeanah, J. *Observational Constraints on First-star Nucleosynthesis. I. Evidence for Multiple Progenitors of CEMP-No Stars*, *The Astrophysical Journal*, 833, 20, Dec. 2016. doi:[10.3847/0004-637X/833/1/20](#). arXiv: [1607.06336 \[astro-ph.SR\]](#).

7. **Yoon, J.**, Peterson, D. M., Kurucz, R. L. & Zagarelo, R. J. *A New View of Vega's Composition, Mass, and Age*, *The Astrophysical Journal*, 708, 71, Jan. 2010. doi:[10.1088/0004-637X/708/1/71](https://doi.org/10.1088/0004-637X/708/1/71).
8. **Yoon, J.**, Peterson, D. M., Zagarelo, R. J., Armstrong, J. T. & Pauls, T. *The Effect of Rotation on the Spectrum of Vega*, *The Astrophysical Journal*, 681, 570, July 2008. doi:[10.1086/588550](https://doi.org/10.1086/588550). arXiv: [0803.3145](https://arxiv.org/abs/0803.3145) [astro-ph].
9. **Yoon, J.**, Peterson, D. M., Armstrong, J. T., Clark James H., I., Gilbreath, G. C., Pauls, T., Schmitt, H. R. & Zagarelo, R. J. *The Effect of Rotation on Calibrators for Ground-based Interferometry*, *Publications of the Astronomical Society of the Pacific*, 119, 437, Apr. 2007. doi:[10.1086/518270](https://doi.org/10.1086/518270).

### Co-Authored Peer Reviewed Journal Articles

10. Whitten\*, D. D., Placco, V. M., Beers, T. C., An, D., Lee, Y. S., Almeida-Fernandes, F., Herpich, F. R., Daflon, S., Barbosa, C. E., Perottoni, H. D., Rossi, S., Tissera, P. B., **Yoon, J.**, Youakim, K., Schoenell, W., Ribeiro, T. & Kanaan, A. *The Photometric Metallicity and Carbon Distributions of the Milky Way's Halo and Solar Neighborhood from S-PLUS Observations of SDSS Stripe 82* Mar. 2021. arXiv: [2104.00016](https://arxiv.org/abs/2104.00016) [astro-ph.GA].
11. Jeon, M., Bromm, V., Besla, G., **Yoon, J.** & Choi, Y. *The role of faint population III supernovae in forming CEMP stars in ultra-faint dwarf galaxies* Dec. 2020. arXiv: [2012.10012](https://arxiv.org/abs/2012.10012) [astro-ph.GA].
12. Lee, Y. S., Beers, T. C., Kim, Y. K., Placco, V., **Yoon, J.**, Carollo, D., Masseron, T. & Jung, J. *Chemical Cartography. I. A Carbonicity Map of the Galactic Halo* Feb. 2017. doi:[10.3847/1538-4357/836/1/91](https://doi.org/10.3847/1538-4357/836/1/91). arXiv: [1702.00195](https://arxiv.org/abs/1702.00195) [astro-ph.GA].
13. Placco, V. M., Frebel, A., Beers, T. C., **Yoon, J.**, Chiti, A., Heger, A., Chan, C., Casey, A. R. & Christlieb, N. *Observational Constraints on First-Star Nucleosynthesis. II. Spectroscopy of an Ultra metal-poor CEMP-no Star* Dec. 2016. doi:[10.3847/0004-637X/833/1/21](https://doi.org/10.3847/0004-637X/833/1/21). arXiv: [1609.02134](https://arxiv.org/abs/1609.02134) [astro-ph.SR].
14. Hansen, T. T., Andersen, J., Nordström, B., Beers, T. C., Placco, V. M., **Yoon, J.** & Buchhave, L. A. *The role of binaries in the enrichment of the early Galactic halo. III. Carbon-enhanced metal-poor stars - CEMP-s stars* Apr. 2016. doi:[10.1051/0004-6361/201527409](https://doi.org/10.1051/0004-6361/201527409). arXiv: [1601.03385](https://arxiv.org/abs/1601.03385) [astro-ph.SR].
15. Hansen, T. T., Andersen, J., Nordström, B., Beers, T. C., Placco, V. M., **Yoon, J.** & Buchhave, L. A. *The role of binaries in the enrichment of the early Galactic halo. II. Carbon-enhanced metal-poor stars: CEMP-no stars* Feb. 2016. doi:[10.1051/0004-6361/201527235](https://doi.org/10.1051/0004-6361/201527235). arXiv: [1511.08197](https://arxiv.org/abs/1511.08197) [astro-ph.SR].
16. Hansen, T. T., Andersen, J., Nordström, B., Beers, T. C., **Yoon, J.** & Buchhave, L. A. *The role of binaries in the enrichment of the early Galactic halo. I. r-process-enhanced metal-poor stars* Nov. 2015. doi:[10.1051/0004-6361/201526812](https://doi.org/10.1051/0004-6361/201526812). arXiv: [1509.05344](https://arxiv.org/abs/1509.05344) [astro-ph.SR].

### Pre-prints

17. Aprahamian, A., Surman, R., Frebel, A., McLaughlin, G. C., Arcones, A., Balantekin, A. B., Barnes, J., Beers, T. C., Holmbeck, E. M., **Yoon, J.**, Brodeur, M., Sprouse, T. M., Vassh, N., Cizewski, J. A., Clark, J. A., Cote, B., Couch, S. M., Eichler, M., Engel, J., Ezzeddine, R., Fuller, G. M., Giuliani, S. A., Grzywacz, R., Han, S., Horowitz, C. J., Kankainen, A., Korobkin, O., Kwiatkowski, A. A., Lawler, J. E., Lippuner, J., Litvinova, E., Mathews, G. J., Mumpower, M. R., Naimi, S., Nazarewicz, W., O'Connor, E., O'Shea, B. W., Perego, A., Perdikakis, G., Radice, D., Richers, S., Roberts, L. F., Robin, C., Roederer, I. U., Siegel, D. M., Schunck, N., Spyrou, A. & Zhu, Y.-L. *FRIB and the GW170817 Kilonova* Sept. 2018. arXiv: [1809.00703](https://arxiv.org/abs/1809.00703) [astro-ph.HE].

### Conference Proceedings

18. Dietz\*, S., Beers, T. C., Placco, V. M., **Yoon, J.** & AEGIS Collaboration. *Kinematic and Chemical Analysis of AEGIS Survey Stars in IAUS 334 Rediscovering Our Galaxy* (eds Chiappini, C., Minchev, I., Starkenburg, E. & Valentini, M.) 334 (Aug. 2018), 283–284. doi:[10.1017/S1743921317006895](https://doi.org/10.1017/S1743921317006895).
19. Lee, Y. S., Beers, T. C., **Yoon, J.**, Kim, Y. K. & Jeong, J. *Assembly of the Galactic Halo System Based on Carbon-Enhanced Metal-Poor Stars in IAUS 334 Rediscovering Our Galaxy* (eds Chiappini, C., Minchev, I., Starkenburg, E. & Valentini, M.) 334 (Aug. 2018), 327–328. doi:[10.1017/S1743921317007529](https://doi.org/10.1017/S1743921317007529).

20. Rasmussen\*, K. C., Beers, T. C., Placco, V. M., **Yoon, J.** & Dietz\*, S. *Measurement of  $[Fe/H]$  and  $[C/Fe]$  for Metal-Poor Stars from the RAVE Survey in IAUS 334 Rediscovering Our Galaxy* (eds Chiappini, C., Minchev, I., Starkenburg, E. & Valentini, M.) **334** (Aug. 2018), 353–354. doi:[10.1017/S1743921317007001](https://doi.org/10.1017/S1743921317007001).
21. **Yoon, J.**, Whitten\*, D. D., Beers, T. C., Placco, V. M., Lee, Y. S., Dietz\*, S., Gudin\*, D. & Rasmussen\*, K. C. *Lifting the Veil on Ultra Metal-Poor Stars in the Outermost Halo in IAUS 334 Rediscovering Our Galaxy* (eds Chiappini, C., Minchev, I., Starkenburg, E. & Valentini, M.) **334** (Aug. 2018), 389–390. doi:[10.1017/S174392131700792X](https://doi.org/10.1017/S174392131700792X).
22. **Yoon, J.**, Peterson, D. M., Armstrong, T., Clark James H., I., Gilbreath, C., Pauls, T. & Schmitt, H. R. *Early type stars as calibrators for ground-based interferometry in Society of Photo-Optical Instrumentation Engineers (SPIE) Conference Series 6268* (June 2006), 626848. doi:[10.1117/12.670309](https://doi.org/10.1117/12.670309).

## Presentations

### Invited Talks and Seminars

- |          |  |
|----------|--|
| Dec 2020 | ■ "First-Star Nucleosynthesis", JINA Horizons Working Group 2: Stellar Burning (virtual meeting)   |
| Dec 2019 | ■ "Understanding cosmic origins with the relics of the first stars", Colloquium at Carnegie Observatories, CA  |
| Jun 2019 | ■ "We are Star Stuff: Galactic Archaeology and the Origin of the Elements", REU seminar talk, University of Notre Dame, IN   |
| May 2019 | ■ "First-star nucleosynthetic imprints in the Milky Way and its satellite dwarf galaxies", 2019 JINA-CEE Frontiers meeting, East Lansing, MI   |
| Dec 2018 | ■ "Decoding the Stellar Fossils of the First Stars", Astronomy colloquium talk, Astronomy program at Seoul National University, Seoul, Korea   |
|          | ■ "Unraveling the Assembly History of the Galactic halo with CEMP-no Stars", Colloquium talk, Korea Astronomy and Space Science Institute, Daejeon, Korea                              |
| Oct 2017 | ■ "Galactic Archeology: Study of the Early Universe with Ancient Stars", the department of Physics and Astronomy at Indiana University at South Bend, South Bend, IN                   |
| Jul 2017 | ■ "Galactic Archeology: Study of the Early Universe with Metal-Poor Stars", Astronomy seminar at Department of Astronomy & Space Science, Chungnam National University, Daejeon, Korea |
| Sep 2016 | ■ "Near-Field Cosmology with Carbon-Enhanced Metal-Poor stars", Astrophysics seminar, at Department of Physics, University of Notre Dame, IN   |

### Contributed Talks

- |          |   |
|----------|---|
| Mar 2020 | ■ "Stochastic Galactic Chemical Evolution" at JINA Galactic Chemical Evolution workshop, MIT, USA   |
| Sep 2019 | ■ "Origin of CEMP-no morphology in the Milky Way halo" at CEMP stars as Probes of First-Star Nucleosynthesis, the IMF, and Galactic Assembly, University of Geneva, Switzerland |
| Dec 2018 | ■ "The Origin of CEMP-no: Connection to the Satellite Dwarf Galaxies" at Stellar Archeology as a Time Machine to the First Stars, Kavli IPMU, Japan                             |
| May 2018 | ■ "Near Field Cosmology with most metal-poor stars" at Enzo Workshop 2018, Atlanta, GA  |

## Presentations (continued)

- Nov 2017    ■ “Lifting the Veil of Ultra Metal-Poor stars in the Outermost Galactic Halo” at A Celebration of CEMP & Gala of GALAH workshop, Melbourne, Australia
- Aug 2017    ■ “Lifting the Veil of Ultra Metal-Poor stars in the Outermost Galactic Halo” at Giant Magellan Telescope Community meeting, Tarrytown, NY
- Feb 2017    ■ “Best and Farthest: Searching for Ultra Metal-Poor stars in the Outermost Galactic Halo” at JINA-CEE Frontiers meeting, Lansing, MI
- Jan 2017    ■ “Best and Farthest: Searching for Ultra Metal-Poor stars in the Outermost Galactic Halo” at the 229th American Astronomical Society Meeting, Grapevine, TX
- Sep 2016    ■ “Evidence for Multiple Progenitors of CEMP-no Stars” at Precision Spectroscopy 2016 workshop, Porto Alegre, Brazil
- Oct 2008    ■ “Updating Vega’s mass, age, and evolutionary status” at the Astronomical Society of New York, New York, IN
- Apr 2007    ■ “The effects of rotation on early type stars as ground-based interferometry calibrators” at the Astronomical Society of New York, Albany, NY

## Posters

- Jan 2020    ■ "Origin and evolution of the CEMP-no stars in the Galaxy and its satellite dwarf galaxies" at the 235th American Astronomical Society meeting, Honolulu, HI
- Jul 2017    ■ “Lifting the Veil of Ultra Metal-Poor stars in the Outermost Galactic Halo” at 334 IAU symposia, Potsdam, Germany
- Apr 2017    ■ “Searching for Ultra Metal-Poor stars in the Outermost Galactic Halo” at JINA-CEE NSF review site visit, Michigan State University, East Lansing, MI
- Aug 2016    ■ “Absolute Carbon Abundance Distribution of Carbon-Enhanced Metal-Poor stars” at The First Stars conference, Heidelberg, Germany
- Mar 2016    ■ “Carbon Plateaus among Carbon-Enhanced Metal-Poor stars” at 2016 JINA-CEE frontiers meeting, South Bend, IN
- Jan 2016    ■ “Carbon Plateaus among Carbon-Enhanced Metal-Poor stars” at the 227th American Astronomical Society meeting, Kissimmee, FL
- Jun 2015    ■ "Tracing Ultra Faint Dwarf galaxies with CEMP-no stars" at Local Group Astrostatistics conference, University of Michigan at Ann Arbor, MI
- Mar 2015    ■ “Searching for Ultra Faint Dwarf galaxies using CEMP-no stars” at JINA-CEE frontiers in Nuclear Astrophysics, Michigan State University, East Lansing, MI
- May 2006    ■ “Early type stars as calibrators for ground-based interferometry” at the International Society for Optical Engineering, Orlando, FL

## Observations/Proposals

- 2016 – Present    ■ **Large Binocular Telescope (LBT)**
  - LUCI (as PI) 2020B (4 hours)
  - PEPSI (as Co-I, PI: Timothy Beers) 2017B (5 hours)
  - MODS (as PI): 2016B (2.8 hours), 2017A (12 hours), 2017B (4 hours), 2018A (4 hours), 2018B (4 hours), 2019A (2 hours), 2019B (2 hours)

## Observations/Proposals (continued)

- 2017 – Present    ■ **Gemini Telescope**
- GMOS Gemini Fast turnaround program 2017A (Co-I, 5.5 hours granted, PI: Vinicius Placco)
  - GMOS Gemini Fast turnaround program 2017B (PI, 6.3 hours granted)
  - GRACES K-GMT Science Program 2018B (Co-I, 10 hours granted, PI: Young Sun Lee)
- 2020– Present    ■ **Subaru Telescope**
- IRD (InfraRed Doppler) 2020A observation (Co-I, one night granted, PI: Wako Aoki )

## Research Experience

- 2018–Present    ■ **Galactic chemical evolution**
- Collaboration with Dr. Benoit Côté
- Developing stochastic Galactic chemical evolution code (Python) using NuGrid [NuPyCEE](#) pipeline to study the effect of stochastic star formation on Galactic chemical evolution
- 2015–Present    ■ **Galactic archaeology and near-field cosmology**
- JINA-CEE Postdoctoral Fellow (2017–present) and Postdoctoral Associate (2015–2017) at the department of Physics and JINA-CEE, University of Notre Dame
- Project leading and development of a stellar parameter pipeline (Python) ([CASPER](#)) for cool carbon stars
  - *Best and Farthest Survey*: Searching for ultra metal-poor stars in the outermost Galactic halo using both Large Binocular Telescopes, Gemini telescopes
  - Kinematical analyses using [galpy](#) of the Galactic halo stars
  - Use of various data such as SDSS, AEGIS, Gaia, and literature database
- 2004–2008    ■ **Stellar Rapid Rotation and Evolution of A and F stars with Prof. Deane M. Peterson**
- Graduate Research Assistant at the department of Physics and Astronomy, Stony Brook University
- Ph. D. Dissertation titled “Rotation and Evolution of A and F stars”
  - Stellar rotation modeling (C programming)
  - High-resolution spectroscopy (ELODIE archival data) and spectral synthesis for 2D rotating stellar models
  - High angular resolution long baseline interferometry (Navy Precision Optical Interferometer)
- Summer 2004    ■ **Stellar Imager Design Reference Mission with Prof. Fred Walter**
- Graduate Research Assistant at the department of Physics and Astronomy, Stony Brook University
- Developed the observation scheduling code using IDL language



## Research Experience (continued)

- Summer 2003    ■ **Photometry Reduction with Prof. Michal Simon**  
Graduate Research Assistant at the department of Physics and Astronomy, Stony Brook University
- 2000–2001    ■ **High Energy Physics with Prof. Soo-Jong Rey**  
Graduate Research Assistant at the School of Physics, Seoul National University  
Master of Science thesis titled "Closed string dynamics in tensor fields"

## External Funding/Travel Grants

- Feb 2020    ■ Travel grant from International Research Network for Nuclear Astrophysics (iReNA) to visit Konkoly Observatory for collaboration, Hungary
- Jan 2020    ■ Travel grants from the Department of Physics and the College of Science at University of Notre Dame, the AAS 235 meeting, Honolulu HI
- Dec 2018    ■ Travel grant from a conference, Stellar Archaeology as a Time Machine to the First Stars, IMPU, Japan
- AAS 2018B International travel grant for a travel to a conference, Stellar Archaeology as a Time Machine to the First Stars, Kavli IPMU, Japan
- Jul 2018    ■ Full travel grant from a workshop, FRIB Theory Alliance r-process meeting
- May 2018    ■ Full travel grant from ENZO user tutorial workshop
- Nov 2017    ■ AAS 2017B International travel grant for a trip to a conference, A celebration of CEMP and gala of GALAH, Melbourne, Australia
- Jul 2017    ■ IAU travel grant, Rediscovering the Galaxy, IAU symposium 334 at Potsdam, Germany
- Jan 2017    ■ Travel grant from Astronomical Society of Pacific & AAS to participate AAS Astronomy Ambassador Program
- Jun 2006    ■ Partial travel grant from Astronomical Society of New York to attend Michelson Summer Workshop in Pasadena, Caltech
- Partial Travel Grant from Michelson Summer Workshop, in Pasadena, California Institute of Technology
- Research Travel Award from Stony Brook University Graduate Student Organization to attend Michelson Summer Workshop, in Pasadena, California Institute of Technology
- 2000–2001    ■ Brain Korea 21 scholarship, School of Physics, Seoul National University
- 1996–1998    ■ Full Scholarship (full tuition waived for 3 years) for 3 highest class rank, Department of Physics, University of Seoul
- 1995        ■ Scholarship (tuition partially waived for a semester), Department of Physics, University of Seoul

## Grant Review Experience and Workshops

- Mar 2019    ■ NSF Astronomy & Astrophysics Grant Review panelist
- May 2018    ■ Writing Successful Grants workshop held at the University of Notre Dame

## Teaching Experience

- Sep 2020    ■ Lecturer, JINA Nuclear Astrophysics Lecture Series (virtual)  
                   – title: "Galactic archaeology: an astrophysical approach to understanding the formation and evolution of the elements"
- May 2019    ■ Summer school lecturer, JINA-CEE First Frontiers Summer School, Michigan State University, East Lansing, MI  
                   – Lecture about stellar evolution and elemental production processes
- 2002–2004    ■ Graduate Teaching Assistant, Department of Physics and Astronomy, Stony Brook University  
                   – Introductory Astronomy, Planetary Sciences, Physics Labs
- 2001–2002    ■ Adjunct Faculty (lecturer and Lab instructor), Department of Physics, University of Seoul  
                   – Introductory Physics I and II classes for engineering and science students
- 1999–2001    ■ Graduate Teaching Assistant, School of Physics, Seoul National University  
                   – Grading for introductory Physics I and II classes for engineering and science students for 4 semesters
- 1998–1999    ■ Undergraduate Teaching Assistant, Department of Physics, University of Seoul  
                   ■ Tutoring teaching university-level physics to a high school student
- 1997        ■ Tutoring calculus to a high school student

## Teaching Workshops

- Attended several teaching workshops held at University of Notre Dame (Kaneb Center for Teaching and Learning)
- 2017        ■ Beyond the Abstract: Teaching with Scientific Literature  
                   ■ Maker Series: Adobe Spark Video  
                   ■ A Landscape View of Digital Teaching and Learning: How to Jump in  
                   ■ Helping Students in Distress  
                   ■ Understanding and Fostering Student Motivation
- 2016        ■ Teaching Writing across Disciplines  
                   ■ Foundations of Teaching in STEM Session I-IV  
                   ■ Once Upon a Time: Storytelling as a Tool for Teaching and Learning

## Mentoring Experience

- 2019–2020    ■ Leading and mentoring a group of graduate students (Dmitrii Gudin, Devin Whitten, and Joseph Zepeda) for a project (CASPER; CEMP Group Assignment and Stellar Parameter Estimation Routine), which analyzes very cool ( $3500 < T_{\text{eff}} < 4500 \text{ K}$ ) CEMP stars and develops a python stellar parameter estimation routine package for cool CEMP stars.



## Mentoring Experience (continued)

- 2017–2018    ■ Di Tian (REU student at University of Notre Dame and undergraduate student from Xi'an Jiaotong University, China)
  - now a Ph D student at Tsinghua University
  - kinematics studies of the high latitude high proper motion stars
  - Explored A(C)–[Fe/H] relation of satellite dwarf galaxies
  - Resulted in a publication for the Astrophysical Journal (Yoon et al., 2019, ApJ, 878,97)
- 2017–2019    ■ Dmitrii Gudin (Graduate student at University of Notre Dame)
  - Study of galaxy formation via data of metal poor stars from cosmological simulations and the project CASPER.
- 2017–2020    ■ Devin Whitten (Graduate student at University of Notre Dame)
  - Developing a novel technique to derive reliable stellar parameters for very cool carbon stars
  - Resulted in two publications (Yoon et al. 2019 ApJ 878, 97 and Yoon et al. 2020 ApJ, 894, 7) and two articles in preparation (“CASPER: CEMP Group Assignment and Stellar Parameter Estimation Routine”)
- 2016–2020    ■ Sarah Dietz (Graduate student at University of Notre Dame)
  - Kinematics studies of the metal-poor stars and metallicity gradient in the Galactic halo
  - Resulted in three articles (Dietz et al. 2018 Proceedings of IAU S334, 329, Yoon et al. 2018, ApJ, 861, 146, and Dietz et al. 2020 ApJ 894, 34)
- 2015–2016    ■ Kaitlin Rasmussen (Graduate student at University of Notre Dame)
  - First-star nucleosynthesis using CEMP stars
  - Resulted in a publication (Yoon et al., 2016, ApJ, 833, 20)
- Summer 2005    ■ Danielle Kumpulanian (REU student from Rensselaer Polytechnic Institute at Stony Brook University)
  - Helping basic linux operation and programming

## Outreach Activities

- 2020    ■ Astronomy Club (3rd graders), Kennedy Primary Academy, South Bend, IN
  - A public outreach talk and demo (emission spectroscopy using spectrum tubes) titled “Origin of the Elements: Star Stuff”
- 2019    ■ *Our Universe Revealed* series, an outreach public program at the Department of Physics at University of Notre Dame
  - A public outreach talk titled “Galactic Archaeology”
  - South Bend community science fair ‘Science Alive’ for general public audience
    - Lead an activity of explaining body composition and the origins of the elements
- 2017    ■ Great American Solar Eclipse
  - Help with public observation
- 2016    ■ JINA-CEE Art2Science Camp for 2–8th grade students
  - Leading Atomic spectroscopy activity
  - Michiana Astronomical Society Meeting, South Bend, IN
    - A public outreach talk titled “Galactic Archaeology: Search for the oldest stars”

## Outreach Activities (continued)

- South Bend community science fair 'Science Alive' for general public audience  
– led an activity explaining the nature of outer space using vacuum chambers
- 2016–Present ■ AAS Astronomy Ambassador
- 2004–2008 ■ Public observation sessions at Stony Brook University

## Professional Associations

- 2016–Present ■ AAS Astronomy Ambassador cohort 2016
- 2015–Present ■ Joint Institute for Nuclear Astrophysics–Center for the Evolution of the Elements
- 2006–Present ■ American Astronomical Society (AAS)

## Service

- 2020–Present ■ Referee, Astronomy & Astrophysics
- 2019 ■ Serving as a mentor for Advancing Women Leaders program at University of Notre Dame
- Co-organizer and lecturer, First Frontiers Summer School, Michigan State University, East Lansing, MI
  - Grant review panelist, National Science Foundation, 2019 Astronomy and Astrophysics Grant Review
- 2018 ■ Organizing chairperson, JINA–CEE Frontiers in Nuclear Astrophysics, University of Notre Dame, IN University of Notre Dame, IN
  - Featured at <http://www.jinaweb.org/docs/Newsletters/JINA-CEE-Newsletter-September-2018Final.pdf>
  - Overseeing local and scientific organizing for both Junior Researchers Workshop (~ 70 people) and the main conference (~ 130 people)
  - The main conference consisted of invited science talks, contributed talks, poster sessions, and breakout sessions.
  - Offered a diversity & inclusion talk titled as “Blinded to Excellence” based on neuroscience and behavioral studies.
  - Junior Research Workshop offered scientific writing, grant writing, publishing AAS journals, speaking skills, outreach workshop along with overview talks and contributed talks
- 2017 ■ Reviewer, Gemini Fast Turnaround Program proposals
- Co-organizer, JINA–CEE Frontiers in Nuclear Astrophysics, East Lansing
  - Session chair, Junior Researcher workshop, JINA–CEE Frontiers in Nuclear Astrophysics, East Lansing, MI
- 2016 ■ Co-organizer, JINA–CEE Frontiers in Nuclear Astrophysics, South Bend, IN
- 2016 – Present ■ AAS Astronomy Ambassador, Astronomical Society of Pacific and American Astronomical Society

## Project Management

- 2018–present    ■ Project leader and mentor for the CASPER project, which analyzes very cool ( $3500 < T_{\text{eff}} < 4500$  K) carbon-enhanced metal-poor stars and is developing a python stellar parameter pipeline package, University of Notre Dame
- 2018–2019    ■ Mentoring a project which explores metallicity gradient in the Galactic halo and mentoring a graduate student, Sarah Dietz, for this project
- 2017–2018    ■ Organizing chair for 2018 JINA-CEE Frontiers meeting (130+ people) and Junior researchers workshop (~ 70 people), University of Notre Dame and Joint Institute for Nuclear Astrophysics-Center for the Evolution of the Element

## Science and Technical Experience

- Observation    ■ Large Binocular Telescope (MODS) and Gemini (GMOS) using [JSkyCal](#), [modsTools](#), Gemini PIT/OT, LBTO OT
- Observation scheduling for Stellar Imager Design Reference Mission
- Spectroscopy   ■ High-resolution (ELODIE), Low-/Medium-resolution (LBT/MODS and Gemini/GMOS)
- Data reduction ([modsCCDRed](#), IRAF, DS9)
- Spectral Analysis (line identification, abundance analyses, spectral synthesis using [MOOG](#), Spectroscopy Made Hard (SMH))
- Use of stellar parameter pipelines ([SSPP](#) for SEGUE spectra, [n-SSPP](#) for non-SEGUE spectra)
- Development of stellar parameter pipeline in Python ([CASPER](#))
- Interferometry ■ Navy Precision Optical Interferometer (simulations in C, ROCHE)
- Development   ■ Chemical Abundance Stellar Parameter Estimation Routine in Python ([CASPER](#))
- Stochastic chemical evolution modeling using [NuPyCEE](#) pipeline
- Modeling 2D rapidly rotating stars (ROCHE C code) to produce composite synthetic spectra and interferometric parameters
- Observation scheduling IDL code for Stellar Imager Design Reference Mission at NASA
- Software packages ■ C (CFITSIO, ROCHE)
- IDL (idlutils, stellar pipelines: SSPP, n-SSPP)
- Fortran (spectral synthesis: [MOOG](#))
- Python (Astropy, [galpy](#), Matplotlib, Jupyter Notebook, [NuPyCEE](#), scikit-learn, scipy, seaborn, Spectroscopy Made Hard (SMH))
- R (agnes, kmeans)
- Graphics (gnuplot, Matplotlib, PGLOT, seaborn)
- Database        ■ Astronomical archive/databases (ADS, Gaia, ELODIE, [SAGAdatabase](#), SDSS/SkyServer, SIMBAD, X-Match)
- SQL, PostgreSQL
- Coding         ■ awk, C, IDL, Python, R, Shell,

## Science and Technical Experience (continued)

OS    ■ Linux, Mac OS X  
 Miscellaneous    ■ Adobe Spark, html, L<sup>A</sup>T<sub>E</sub>X

## Media/Press/Newsletters

- Sep 2018    ■ "Frontiers in Nuclear Astrophysics meeting 2018" featured at [JINA-CEE newsletter](#)
- Dec 2016    ■ "Second-generation stars identified, giving clues about their predecessors",  
 by Brian Wallheimer featured at [Notre Dame News](#), [Science Daily](#), [Phys.org](#),  
[EurekAlert](#), [eScience News](#).
- Aug 2016    ■ "Evidence for multiple progenitors for CEMP-no stars", featured at [JINA-CEE newsletter](#)
- Jul 2016    ■ "Hints of Universe's Very First Stars" by Bruce Dorminey featured at [Forbes magazine](#)