

BO-EUN CHOI

she/her

ASTRONOMY PHD STUDENT



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Department of Astronomy
University of Washington
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Education

2021.09 - present

University of Washington

PhD Student, Astronomy

2023.06

University of Washington

MSc, Astronomy

2021.02

Sejong University

MSc, Astronomy and Space Science

Thesis: Line Formation and Spectroscopic Survey of Raman-scattered He II Features in Young Planetary Nebulae

2019.02

Sejong University

BSc, Astronomy and Space Science

BSc, Physics

Cum Laude

Research Interest

Cosmic Baryon Cycle & Chemical Evolution

I am interested in detailed physical processes within the cosmic baryon cycle, how pristine gas is accreted into galaxies and fuel star formation, and how feedback processes efficiently redistribute baryons and enrich metals in gas. I use spectroscopy to trace metals and gas flows along the cycle.

Massive Stars: Powerful Feedback Drivers

Massive stars drive strong radiative, kinematic, and chemical feedback, having a huge impact on the host galaxy, but our understanding of their evolution is limited. I am interested in deciphering their evolutionary history from their observable properties.

Keywords: **CGM, Stellar Feedback, Stellar Evolution, Spectroscopy, Radiative Transfer**

Publications

[ADS](#) | [arXiv](#)

- **Choi, B.-E.**, Werk, J. K. & Tchernyshyov, K., et al. *submitted to ApJ*
The Metallicity Mapping of the Ionized Diffuse Gas at the Milky Way Disk-halo Interface
- **Choi, B.-E.** & Lee, H.-W. 2020, ApJL, 903, L39
Discovery of Raman-scattered He II $\lambda 6545$ in the Planetary Nebulae NGC 6886 and NGC 6881
- **Choi, B.-E.**, Chang, S.-J., Lee, H.-G. & Lee, H.-W. 2020, ApJ, 889, 2
Line Formation of Raman-scattered He II $\lambda 4851$ in an Expanding Spherical H I Shell in Young Planetary Nebulae
- Angeloni, R., ..., **Choi, B.-E.**, et al. 2019, AJ, 157, 156
RAMSES II - RAMan Search for Extragalactic Symbiotic Stars: Project Concept, Commissioning, and Early Results from the Science Verification Phase

Research Experience

Graduate Research Assistant University of Washington, USA	2021.09-present
<ul style="list-style-type: none">• Advisor: Prof. Jessica K. Werk Metallicity study of the ionized diffuse gas at the Milky Way disk-halo interface using HST UV archival data with a precise ionization correction using CLOUDY.• Advisor: Prof. Emily M. Levesque Chemical abundance study of evolved massive stars to search for Thorne-Zytkow objects using high-resolution spectral data and stellar atmosphere modeling.	
Post-master Researcher UNIST, South Korea	2021.03-2021.07
Advisor: Prof. Maurice van Putten 3-body simulation to investigate orbital stability of prograding and retrograding circumbinary planet	
Graduate Research Assistant Sejong University, South Korea	2019.03-2021.02
Advisor: Prof. Hee-Won Lee - Spectroscopic survey of Raman-scattered He II features in young planetary nebulae - Radiative transfer for Raman-scattered He II in a thick H I medium of mass-losing evolved stars.	

Successful Observing Proposals

Building a Spectroscopic Tool for TZO Search (P.I.)	
- 3.75 hours with GHOST - 8.1 m Gemini-South Telescope (2023B FT) - 4 nights with ARCES - 3.5 m ARC Telescope (2022Q3, 2023Q2)	
* Spectroscopic Survey for Raman He II Features in Young Planetary Nebulae	
- 4.8 hours with GRACES - 8.1 m Gemini-North Telescope (2019A, 2020B) - 19 nights with BOES - 1.8 m BOAO Telescope (2019A, 2020A&B) - 8.5 nights with MRES - 2.4 m Thai National Telescope (Cycle7, 8)	
* Spectropolarimetry Monitoring of Raman-Scattered O VI Features in S-type Symbiotic Stars	
- 3 nights with BOES - 1.8 m BOAO Telescope (2019B) <i>* Co-I of the proposals, but the primary observer</i>	

Awards Scholarships Grants

Jacobsen Fund (\$350) Astronomy Department, University of Washington	2023.07
Outstanding TA Award Astronomy Department, University of Washington	2022.09
Jacobsen Fund (\$1,700) Astronomy Department, University of Washington	2022.04
Outstanding Research Award Graduate School, Sejong University	2021.02
Outstanding Presentation Award - Korean Physical Society	2019.10

Conferences & Talks

MIAPbP - “Some Like It Hot”: A Journey from the Hot IGrM to the Multiphase CGM Garching, Germany	2024.04
ESO CGM Group Seminar Talk Garching, Germany	2024.04
New Views on Feedback & the Baryon Cycle in Galaxies Healesville, Australia Talk: The Metallicity Mapping of the Ionized Diffuse Gas at the Milky Way Disk-halo Interface	2023.07
Seminar Talk at the RSAA of Australian National University Canberra, Australia	2023.07
241st AAS meeting Seattle, USA Talk: The Metallicity Mapping of the Ionized Diffuse Gas at the Milky Way Disk-halo Interface	2023.01
2022 XXXI IAUGA Busan, South Korea Poster: Spectral Features and Variability of the Thorne-Zytkow Object Candidates in the SMC	2022.08
102nd Korean Astronomical Society Meeting Online Talk: Discovery of Raman-scattered He II $\lambda 6545$ in Planetary Nebulae NGC 6886 and NGC 6881 from BOES Spectroscopy Poster: Activity of Korean Young Astronomers’ Meeting in 2019-2020 Season (co-author)	2020.10
2019 XVI Latin American Regional IAU Meeting Antofagasta, Chile Poster: A Study of Line Formation of Raman-Scattered He II $\lambda 4851$ in Young Planetary Nebulae	2019.11
96th Korean Physical Society Meeting Gwangju, South Korea Poster: A New Grid-Based Radiative Transfer Simulation for Raman Scattering of He II with Atomic Hydrogen	2019.10
100th Korean Astronomical Society Meeting Busan, South Korea Poster: A New Grid-based Monte Carlo Code for Raman Scattered He II : Preliminary Results	2019.04
2019 Korea Young Astronomers’ Meeting Workshop Daejeon, South Korea Poster: The Emission Line Formation in an Accretion Disk of Schwarzschild Black Hole	2019.02

Teaching & Advising Experience

UW Graduate Mentor Abbas Jaffery, now Application Engineer at Radiant Vision Systems	2022-2023
UW Astronomy PreMAP Mentor <ul style="list-style-type: none">• Jimmy Fowler• Anaïs Martin• Pranathi Ramesh	Fall 2022
Teaching Assistant University of Washington, USA <ul style="list-style-type: none">• Introduction to Astronomical Data Analysis (ASTR 480)• ASTR 101	2021-2022 Spring 2022 Fall 2021, Winter 2022
Teaching Assistant Sejong University, South Korea <ul style="list-style-type: none">• Introduction to Astronomical Spectroscopy (300 level)• Astrophysics (300 level)• General Physics 2 (100 level)	2018-2020 Fall 2018 & 2020 Spring 2019 & 2020 Fall 2019

Outreach

Astronomy on Tap @ Seattle Flyer Designer	2023 - present
Public Talk at Jungang Girls' High School	2021. 08
Staff of 2021 IAUGA Session of Busan Science Festival	2019.04
Volunteer Instructor at the Observatory of Seoul	2014-2016
Sejong University Starry Night Festival Staff	2014-2016

Professional Services

Apache Point Observatory ARC 3.5 m UW TAC	2023 - present
Organizing committee of Korean Young Astronomers' Meeting	2020
LOC member of the 1st Korean Lyman Alpha Workshop	2019.01
Student staff of Korean Astronomical Society Meeting	2017.04