Dooseok JUNG

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Education

University of Massachusetts Amherst
Ph.D. in Astrophysics (*expected*) 2025
Thesis: "Massive Star Hunting Manual"
Advisor: Daniela Calzetti

Yonsei University (Seoul Campus)
M.S. in Astronomy 2017
Thesis: "Near-Infrared Photometric Properties of Red Supergiant Stars in Nearby Galaxies: NGC 4214, NGC 4736 and M51"
Advisor: Young-Jong Sohn

Yonsei University (Seoul Campus)
B.S. in Astronomy and B.S. in Physics (Dual Degree) 2014

Academic Positions

University of Massachusetts Amherst 2018-present
Graduate Researcher

Space Telescope Science Institute June-July 2024
Visiting Researcher (group: GREENS, MINGLE)

Yonsei University (Seoul Campus) 2014-2017
Graduate Researcher in Yonsei Observational Astronomy Lab (YOAL)

University of California, Berkeley July-Aug 2012
Summer Internship in Radio Astronomy Lab (RAL)

Grants, Fellowships & Awards

Grants:
Mary Dailey Irvine Travel Grant, Five College Astronomy Department, $3,800 (total)
GALCROSS, Brno, Czech Republic, $200 2024
#32 IAU GA, Cape Town, Republic of South Africa, $1,000 2024
#21 MODEST-23, CIERA (Northwestern University), Evanston, IL, $800 2023
#31 IAU GA, Busan, Republic of Korea (South), $1,000 2022
#235 AAS Meeting, Hawai'i, HI, $800 2020

IAU Travel Grant, #31 IAU GA, €1,700 ($1,800) 2022
KAS Travel Grant (Registration & Accommodation), #31 IAU GA, $1,400 2022

Fellowships:
BrainKorea21 Plus, National Research Foundation, $25k 2014-2017
Korean-Massive Open Online Course (K-MOOC), NILE, $4,200 2015
National Scholarship for Science & Engineering, KOSAF, $27k 2006-2007, 2010-2012

Awards:
Excellence Award (Spring Semester), Yonsei University 2006

Teaching

Lecturer:
University of Massachusetts Amherst
"Modern Astronomy", Pre-college Summer Program 2019-2020

Yonsei University (Mirae Campus)
"Understanding of Space" 2017-2018

Teaching Assistant:
University of Massachusetts Amherst
Undergraduate courses
"Exploring the Universe" 2024

UMass Summer Research Experience in Astronomy 2022
Title: "Why do Stars come in Multi-Colors?"

K-MOOC, NILE
"Understanding of Space" 2015-2017

Yonsei University
Institute of Science Education for the Gifted & Talented (ISEGT) 2014-2017
Undergraduate courses
"Observational Techniques I", "Earth and The Universe" 2014

Presentations

Talks:
Conference
Galaxies at Crossroads (GALCROSS) 2024
(*Highlight*) The stellar Initial Mass Function (IMF)
Title: "Spectroscopic Analysis of Very Massive Stars in the Context of Upper End of the IMF and MZR"

#31 IAU GA 2022
(*Contributed*) Focused Meeting 4 (UV Insights to Massive stars and Young Stellar Clusters)

Title: "Universal Upper Ends of the Stellar Initial Mass Function in the Young and Compact LEGUS clusters"

APEC Young Scientists Workshop II 2015
Media group, Effective Science Communication in the 21st Century
Title: MESSIAH (Media Equipped Sexy Science with the Information of Awakening Humanity)

Seminar/Colloquia

Astro/Space Seminar, University of Kansas (online) 2025
Title: *"Massive Star Hunting Manual: Very Massive Stars and their Application to the Stellar IMF"*

(*Invited*) Science Seminar, University of Wisconsin-Madison (online) 2024
Title: "Is VMS Ubiquitous? Very Massive Stars (VMSs) in the Context of the Upper End of the Stellar IMF (uIMF)"

2nd-year Project, University of Massachusetts Amherst 2020
Title: "Universal Upper Ends of the Stellar Initial Mass Function in the Young and Compact LEGUS clusters"

Galaxy Lunch, University of Massachusetts Amherst 2020
Title: "How to avoid that Machine Learning becomes Machine Cheating"

1st-year Project, University of Massachusetts Amherst 2019
Title: "Comparison of the Star Formation Scaling with Gas between the Centers and the Disks of Nearby Spiral Galaxies"

Dissertation

Thesis Examination (Master's Degree), Yonsei University 2016
Title: "Near-Infrared Photometric Properties of Red Supergiant Stars in Nearby Galaxies: NGC 4214, NGC 4736 and M51"

Poster:

Galactic Frontiers II 2025
Title: "Star Formation on Sub-kpc Scales in Nearby Dwarf Galaxies via Young and Compact Stellar Clusters"

#32 IAU GA 2024
Title: "Comparative Spectroscopic Analysis of Very Massive Stars in Metal-rich and Metal-poor Star Clusters: Insights from HST FUV Observations"

#21 MODEST-23 2023
Title: "Universal Upper Ends of the Stellar Initial Mass Function in the Young and Compact LEGUS clusters"

#235 AAS Winter Meeting 2020
Title: "Comparison of the Star Formation Scaling with Gas between the Centers and the Disks of Nearby Spiral Galaxies"

#229 AAS Winter Meeting 2017
Title: "Near-Infrared Photometric Properties of Red Supergiant Stars in Nearby Galaxies: NGC 4214, NGC 4736 and M51"

#34 KSSS Fall Meeting 2016
Title: "Near-infrared Photometric Properties of Redsupergiant Stars in Nearby Galaxies: NGC 4214, NGC 4736 and NGC 5194 / NGC 5195"

#54 KAS Fall Meeting 2016
Title: "Near-infrared photometric properties of redsupergiant Stars in nearby galaxies: NGC 4214, NGC 4736 and NGC 5194 / NGC 5195"

Press & Outreach

Media:
Sunderland Elementary School, Greenfield Recorder 2020
Title: "A meeting of the minds: Sunderland sixth-graders interview UMass graduate students for podcasts"

"People" section, Crossroads, Asia Pacific Center for Theoretical Physics (APCTP) 2018
Title: "The Last Conversation with Dooseok Jung who is looking forward to being the 2nd Dr. Gyeong-chul Cho"

K-MOOC YouTube Channel, K-MOOC, NILE 2015
Title: "Introduction of K-MOOC Lecture: Understanding of Space (prof. Young-Jong Sohn, Yonsei Univ.)"

Volunteer:
"Astronomy is for Everyone", University of Massachusetts Amherst 2025
Eclipse Watch Party, Smith College 2024
Public Lecture, University of Massachusetts Amherst 2023
Title: "Mars, MOXIE and the Future of Human Space Flight"
#31 IAU GA, Busan, Korea 2022
Discussion about Space Exploration, Sunderland Elementary School 2020
Field Trip for Elementary School Students, University of Massachusetts Amherst 2020
Public Lecture, Yonsei University, K-MOOC 2016
Title: "Recipe of the Universe"

Publications

First-Author Papers:
1. "Universal Upper End of the Stellar Initial Mass Function in the Young and Compact LEGUS Clusters"
Jung, D. E., Calzetti, D., Messa, M., Heyer M., Sirressi, M., Linden, S. T. et al. 2023, ApJ, 954, 136

Contributing-Author Papers:

2. “STARCNET: Machine Learning for Star Cluster Identification”
Pérez G., Messa, M., Calzetti, D., Maji, S., **Jung, D. E.**, Adamo, A., and Sirressi, M. 2021, ApJ, 907, 100

1. “Tidal Stripping Stellar Substructures around four Metal-poor Globular Clusters in the Galactic Bulge”
Chun, S.-H., Kang, M., **Jung, D**., and Sohn, Y.-J. 2015, AJ, 149, 29

Conference Proceedings:
6. “Universal Upper End of the Stellar Initial Mass Function in the Young and Compact LEGUS clusters” (submitted)
Jung, D. E., Calzetti, D., Messa, M., Heyer, M. 2023, IAU GA,

5. “Comparison of the Star Formation Scaling with Gas between the Centers and the Disks of Nearby Spiral Galaxies”
Jung, D. E., Calzetti, D. Heyer, M. 2020, AAS, 275, 07

4., “Near-Infrared Photometric Properties of Red Supergiant Stars in Nearby Galaxies: NGC 4214, NGC 4736 and M51”
Jung, D., Chun, S.-H., Choudhury, S., Sohn, Y.-J. 2017, AAS, 229, 266

3. “Near-infrared Photometric Properties of Redsupergiant Stars in Nearby Galaxies: NGC 4214, NGC 4736 and NGC 5194 / NGC 5195”
Jung, D., Chun, S.-H., Choudhury, S., Sohn, Y.-J. 2016, KSSS, 25, 29

2. “Near-infrared photometric properties of redsupergiant Stars in nearby galaxies: NGC 4214, NGC 4736 and NGC 5194 / NGC 5195”
Jung, D., Chun, S.-H., Choudhury, S., Sohn, Y.-J. 2016, KAS, 41, 63

1. “Stellar Properties of Asymptotic Giant Branch Stars in the Dwarf Irregular Galaxy IC 1613”
Chun, S.-H., Jung, M. Y., Kang, M., **Jung, D.**, Sohn, Y.-J. 2014, ASPCS, 497, 481

Graduate Thesis:
1. “Near-Infrared Photometric Properties of Red Supergiant Stars in Nearby Galaxies: NGC 4214, NGC 4736 and M51”
Jung, D., Master’s Degree, Yonsei Graduate School 2017

Copy Editor:
1. “Recipe of the Universe”
Sohn, Y.-J., Oort Publishing Company, ISBN 979-11-955549-0-4 (03440) 2015

Notable Activities

Seminar:
Research Mentor Training, University of Massachusetts Amherst 2024

Certificate:
Summer School in Astrostatistics & Astroinformatics, Center for Astrostatistics, PSU 2022
Machine Learning application on Astronomy with R and Python

Contest:
Selected, Research Art-Science Exhibition, University of Massachusetts Amherst 2019
Competition of artistic images motivated by STEM research and rich diversity

APCTP:
Science Reporter, *"People"* section, Crossroads 2015-2018
National Representative of Korea, APEC Young Scientists Workshop 2015

Military Service:
Transportation Unit, Republic of Korea Air Force 2008-2009

Available Computer Languages

Programming languages: **Python**, R, Julia, SQL, C/C++, Fortran (gfrotran 77)
Astronomical application: IRAF, DS9, DAOPHOT II, ALLSTAR
Operating system: Linux (Ubuntu), Macintosh, Windows
Office suite: LaTeX, Microsoft Office (Word, PowerPoint, Excel)