

Jubee Sohn

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Research Interests

1. The study of galaxy clusters and large-scale structures based on large spectroscopic surveys
2. Evolution of galaxies in cluster environments
3. Combining spectroscopy and the weak lensing and X-ray analysis for galaxy clusters.
4. Validation tests of reduction/analysis systems for spectroscopic and imaging data

Broad experience in i) conducting large-scale spectroscopic surveys e.g., HectoMAP - one of the largest redshift surveys at intermediate redshift ($0 < z < 0.6$), and MACH - a dense survey for the massive clusters in the local universe), ii) in observation management, iii) spectroscopic and imaging data reduction, iv) construction and statistical analysis of large datasets, v) and in the design and completion of significant scientific investigation.

EMPLOYMENT

Seoul National University	Assistant Professor	2022/09 –
Center for Astrophysics Harvard Smithsonian	HectoMAP Fellow	2015 – 2022
Seoul National University	Research Assistant	2009 – 2015

EDUCATION

Seoul National University (SNU)	Seoul, South Korea
B.S. in Astronomy	Feb. 2009
Ph.D in Astronomy	Sep. 2015
Thesis : The Spectroscopic Studies on the Sloan Digital Sky Survey Compact Groups	
Advisor : Prof. Myung Gyoon Lee	

REFERENCES

Prof. Margaret Geller	Smithsonian Astrophysical Observatory, USA	mgeller@cfa.harvard.edu
Prof. Ian Dell'Antonio	Brown University, USA	ian_dell'antonio@brown.edu
Prof. Ivana Damjanov	Saint Mary's University, Canada	ivana.damjanov@smu.ca

SKILLS

Programming	IDL, Python, R, IRAF, \LaTeX
Construction/Management of Large Datasets	HectoMAP, MACH (Sohn et al. 2020b), HeCS-omnibus (Sohn et al. 2020a)
Derivation of Physical Properties of Galaxies	Size, photometric redshift, stellar mass (imaging) stellar velocity dispersion, line analysis (spectroscopy)

Current Large Collaboration

HectoMAP	MMT/Hectospec survey for intermediate redshift
LoVoCCS	CTIO/DECam & Subaru/HSC Weak Lensing Survey for nearby clusters
HeCS-omnibus	MMT/Hectospec survey for galaxy clusters

PROFESSIONAL SERVICES

Journal Peer Review	Nature Astronomy, MNRAS, ApJL
Review panels	Telescope Time Allocation Committee for Korean-GMT Program (MMT, Gemini)
Committee Service	Galaxies and Cosmology Seminar Series, CfA (2017, 2018, 2019) Graduate Students Council, SNU Astronomy Department (2013)

OBSERVING NIGHTS AWARDS

MMT/Hectospec	8 Nights in 2021 (PI)
MMT/Hectospec	9 Nights in 2020 (PI)
Keck/LRIS	0.5 Night in 2020A (CoI)
MMT/Hectospec	9 Nights in 2019 (PI)
MMT/Hectospec	8 Nights in 2018 (PI)
MMT/Hectospec	8 Nights in 2017 (PI)
MMT/Hectospec	2 Nights in 2016b (PI)
FLWO/FAST	17 Nights in 2019 (PI)
CFHT/MegaCam	1 Night in 2014 (CoI)
BOAO/4KCCD	9 Nights in 2011 - 2014 (CoI)
BOAO/Longslit	2 Nights in 2014 (CoI,)
FLWO/FAST	5 Nights in 2013 (CoI)

PUBLICATIONS: 16 First Author Publications, 20 Coauthor Publications

15 FIRST AUTHOR PUBLICATIONS: > 3000 Downloads; 195 Citations

1. Dynamical Evolution of Brightest Cluster Galaxies and Their Host Clusters: Insights from IllustrisTNG

- Sohn, J.**, Geller, M. J., Vogelsberger, M., Borrow, J., 2022, arXiv:2207.01637 (ApJ accepted)
2. Co-evolution of the Brightest Cluster Galaxies and their Host Clusters in IllustrisTNG
Sohn, J., Geller, M. J., Vogelsberger, M., Damjanov, I., 2022, ApJ, 931, 31
 3. The HectoMAP Cluster Survey: Spectroscopically Identified Clusters and their Brightest Cluster Galaxies (BCGs)
Sohn, J., Geller, Margaret J., Hwang, H. S., Diaferio, A., Rines, K. J., Utsumi, Y., 2021, ApJ, 923, 143
 4. The HectoMAP Redshift Survey: First Data Release
Sohn, J., Geller, M. J., Hwang, H. S., Fabricant, D. G., Moran, S. M., Utsumi, Y., 2021, ApJ, 909, 129
 5. The Velocity Dispersion Function for Quiescent Galaxies in Nine Strong-Lensing Clusters
Sohn, J., Fabricant, D. G., Geller, M. J., Hwang, H. S., Diaferio, A., 2020, ApJ, 902, 17
 6. Velocity Dispersions of Brightest Cluster Galaxies and Their Host Clusters,
Sohn, J., Geller, M. J., Diaferio, A., Rines, K. J., 2020, ApJ, 891, 129
 7. A Spectroscopic Census of X-ray Systems in the COSMOS Field,
Sohn, J., Geller, M. J., Zahid, H. J., 2019, ApJ, 880, 142
 8. A Complete Spectroscopic Census of A2029: A Tale of Three Histories,
Sohn, J., Geller, M. J., Zahid, H. J., Fabricant, D. G., 2019, ApJ, 872, 192
 9. The Massively Accreting Cluster A2029,
Sohn, J., Geller, M. J., Walker, S. A., Dell’Antonio, I., Diaferio, A., Rines, K. J., 2019, ApJ, 871, 129
 10. The HectoMAP Cluster Survey. I. redMaPPer Clusters,
Sohn, J., Geller, M. J., Rines, K. J., Hwang, H. S., Utsumi, Y., Diaferio, A., 2018, ApJ, 856, 172
 11. The HectoMAP Cluster Survey. II. X-Ray Clusters,
Sohn, J., Chon, G., Böhringer, H., Geller, M. J., Diaferio, A., Hwang, H. S., Utsumi, Y., Rines, K. J., 2018, ApJ, 855, 100
 12. The Velocity Dispersion Function for Quiescent Galaxies in the Local Universe,
Sohn, J., Zahid, H. J., Geller, M. J., 2017, ApJ, 845, 73
 13. The Velocity Dispersion Function of Very Massive Galaxy Clusters: Abell 2029 and Coma,
Sohn, J., Geller, M. J., Zahid, H. J., Fabricant, D. G., Diaferio, A., Rines, K. J., 2017, ApJS, 229, 20
 14. Catalogs of Compact Groups of Galaxies from the Enhanced SDSS DR12,
Sohn, J., Geller, M. J., Hwang, H. S., Zahid, H. J., Lee, M. G., 2016, ApJS, 225, 23
 15. Compact Groups of Galaxies with Complete Spectroscopic Redshifts in the Local Universe,
Sohn, J., Hwang, H. S., Geller, M. J., Diaferio, A., Rines, K. J., Lee, M. G., Lee, G.-H., 2015, JKAS, 48, 381
 16. Activity in Galactic Nuclei of Compact Group Galaxies in the Local Universe,
Sohn, J., Hwang, H. S., Lee, M. G., Lee, G.-H., Lee, J. C., 2013, ApJ, 771, 106

22 COAUTHOR PUBLICATIONS

1. LoVoCCS. I. Survey Introduction, Data Processing Pipeline, and Early Science Results,
Fu, S., Dell’Antonio, I., ..., **Sohn, J.**, 2022, ApJ, 933, 84

2. A Spectroscopic View of the JWST/GTO Strong Lensing Cluster A1489,
Rines, K. J., **Sohn, J.**, Geller, M. J., Diaferio, A., 2022, ApJ, 930, 156
3. Quiescent Galaxy Size, Velocity Dispersion, and Dynamical Mass Evolution,
Damjanov, I., **Sohn, J.**, Utsumi, Y., Geller, M. J., Dell'Antonio, I., 2022, ApJ, 929, 61
4. Chandra follow up of the Hectospec Cluster Survey: Comparison of Caustic and Hydrostatic
Masses and Constraints on the Hydrostatic Bias,
Logan, C. H. A., Maughan, B. J., Diaferio, A., Duffy, R. T., Geller, M. J., Rines, K., **Sohn, J.**, arXiv:2202.08569
(A&A accepted)
5. Tracing Dark Matter Halos with Satellite Kinematics and Central Stellar Velocity Dispersion of
Galaxies,
Seo, G., **Sohn, J.**, Lee, M. G., 2020, 903, 130
6. Mysterious Globular Cluster System of the Peculiar Massive Galaxy M85,
Ko, Y., Lee, M. G., Park, H. S., **Sohn, J.**, Lim, S., Hwang, N., Park, B.-G., 2020, arXiv:2010.03041 (ApJ
accepted)
7. The Mass Accretion Rate of Clusters of Galaxies: CIRS and HeCS,
Pizzardo, M., Di Gioia, S., Diaferio, A., De Boni, C., Serra, A. L., Geller, M. J., **Sohn, J.**, Rines, K., Baldi,
M., 2020, arXiv:2005.11562 (ApJ submitted)
8. Velocity Dispersions of Massive Quiescent Galaxies from Weak Lensing and Spectroscopy,
Utsumi, Y., Geller, M. J., Zahid, H. J., **Sohn, J.**, Dell'Antonio, I. P., Kawanomoto, S., Komiyama, Y.,
Koshida, S., Miyazaki, Satoshi, 2020, ApJ, 900, 50
9. Spectroscopic Tomography: A First Weak Lensing Detection Using Spectroscopic Redshifts Only,
Dell'Antonio, I., **Sohn, J.**, Geller, M. J., McCleary, J., 2019, arXiv:1912.05479 (ApJ accepted)
10. A Wide-field Photometric Survey of Globular Clusters in the Peculiar Early-type Galaxy M85,
Ko, Y., Lee, M.G., Park, H.S., Lim, S., **Sohn, J.**, Hwang, N., Park, B.-G., 2019, ApJ, 872, 202
11. The Coevolution of Massive Quiescent Galaxies and Their Dark Matter Halos over the Last 6
Billion Years,
Zahid, H. J., Geller, M. J., Damjanov, I., **Sohn, J.**, 2019, ApJ, 878, 158
12. Quiescent Galaxy Size and Spectroscopic Evolution: Combining HSC Imaging and Hectospec
Spectroscopy,
Damjanov, I., Zahid, H.J., Geller, M. J., **Sohn, J.**, 2019, ApJ, 872, 192
13. A Complete Photometric Catalog of $r_p < 17.77$ SDSS Galaxies without Spectroscopy,
Lazo, B., Zahid, H. J., **Sohn, J.**, Geller, M. J., 2018, RNAAS, 2, 234
14. HeCS-red: Dense Hectospec Surveys of redMaPPer-selected Clusters,
Rines, Ken J., Geller, M. J., Diaferio, A., Hwang, H. S., **Sohn, J.**, 2018, ApJ, 862, 172
15. Gemini/GMOS Spectroscopy of Globular Clusters in the Merger Remnant Galaxy M85,
Ko, Y., Lee, M. G., Park, H. S., **Sohn, J.**, Lim, S., Hwang, N., 2018, ApJ, 859, 108
16. Stellar Velocity Dispersion: Linking Quiescent Galaxies to Their Dark Matter Halos,
Zahid, H. J., **Sohn, J.**, Geller, M. J., 2018, ApJ, 859, 96

17. The Fastest Galaxy Evolution in an Unbiased Compact Group Sample with WISE,
Lee, G.-H., Hwang, H. S., **Sohn, J.**; Lee, M. G., 2017, ApJ, 835, 280
18. To the Edge of M87 and Beyond: Spectroscopy of Intracluster Globular Clusters and Ultracom-
pact Dwarfs in the Virgo Cluster,
Ko, Y., Hwang, H. S., Lee, M. G., Park, H. S., Lim, S., **Sohn, J.**, Jang, I. S., Hwang, N., Park, B. -G., 2017,
ApJ, 835, 212
19. Compact E+A Galaxies as a Progenitor of Massive Compact Quiescent Galaxies at $0.2 < z < 0.8$,
Zahid, H. J., et al. **Sohn, J.**, 2016, ApJ, 831, 146
20. Optical Spectroscopy of Supernova Remnants in M81 and M82,
Lee, M. G., **Sohn, J.**, et al., 2015, ApJ, 804, 63
21. Galaxy Evolution in the Mid-infrared Green Valley: A Case of the A2199 Supercluster,
Lee, G. -H., Hwang, H. S., Lee, M. G., Ko, J, **Sohn, J.**, Shim, H., Diaferio, A., 2015, ApJ, 800, 80
22. Do Bars Trigger Activity in Galactic Nuclei?,
Lee, G.-H., et al. **Sohn, J.**, 2012, ApJ, 750, 141

SELECTED INVITED TALKS and SEMINARS

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| 2019 | Astrophysics Seminar, Purdue University, USA (Invited) |
| 2019 | Colloquium, Saint Mary's University, Canada (Invited) |
| 2019 | MMT 40th Anniversary Symposium, U. of Arizona, USA (Invited) |
| 2019 | ITC Seminar, Harvard, USA (Invited) |
| 2019 | Panchromatic Panoramic Studies of Galaxy Clusters: from HSC to PFS and ULTIMATE,
ASIAA, Taiwan |
| 2018 | 8th KIAS workshop on Cosmology and Structure Formation, KIAS, South Korea |
| 2018 | Galaxy Evolution Group Seminar, KASI, South Korea (Invited) |
| 2018 | Lunch Seminar, Peking University, China |
| 2017 | Lunch Seminar, Iceland University, Iceland |
| 2017 | Galaxies & Cosmology Seminar, CfA, USA (Invited) |
| 2016 | 7th KIAS workshop on Cosmology and Structure Formation, KIAS, South Korea |
| 2014 | K-GMT White Paper Meeting, South Korea |

TEACHING and ADVISING EXPERIENCE

Thesis Advisor	SNU Master's degree, Gangil Seo
Research Advisor	CfA Internship Program, Brandon Lazo
Teaching Assistant	Observation Astronomy, SNU

HONORS

Brain Korea 21 (BK21) Scholarship, Korea	2014-2015
Global Ph.D Fellowship, National Research Foundation of Korea	2011-2013
Kim In-Ha Scholarship, SNU, Korea	2010-2011
BK21 Fellowship, Frontier Physics Research Division in SNU, Korea	2009-2010
SNU Superior Academic Performance Scholarship, Korea	2005-2009