Jongho Park | Curriculum Vitae

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Personal Details

Date of birth: 1990 December 08
Place of birth: Seoul, Republic of Korea
Nationality: Korean
Languages: Korean (native), English (fluent), Mandarin (fragmentary)
ORCID: 0000-0001-6558-9053

Education

Seoul National University **Seoul, Korea**
Ph.D. in Astronomy *08/2019*
Advisor: Prof. Sascha Trippe
Thesis: A multiscale view of AGN jets:
from the formation and acceleration to high energy outbursts

B.Sc. in Physics & Astronomy, cum laude *02/2013*

Employment

East Asia Core Observatories Association (EACOA) @ ASIAA **Taipei, Taiwan**
EACOA Fellow *09/2020 – Present*
Advisor: Dr. Keiichi Asada, Dr. Masanori Nakamura, Dr. Geoffrey Bower

Academia Sinica Institute of Astronomy & Astrophysics (ASIAA) **Taipei, Taiwan**
Academia Sinica (AS) Postdoctoral Fellow *01/2020 – 08/2020*
ASIAA Postdoctoral Fellow *09/2019 – 12/2019*
Advisor: Dr. Keiichi Asada, Dr. Masanori Nakamura, Dr. Geoffrey Bower

Scholarships and Fellowships

EACOA Fellowship
East Asia Core Observatories Association (EACOA) *09/2020–Present*

Academia Sinica Postdoctoral Fellowship
Academia Sinica *09/2019–08/2020*

Global Ph.D. Fellowship (Grants obtained as a PI: $28,000/*yr*)
National Research Foundation of Korea *03/2014–02/2019*

Publications (ADS Link)

Refereed Journal Articles – First Authorships

11. *A revised view of the linear polarization in the subparsec core of M87 at 7 mm*
Park, J.; Asada, K.; Nakamura, M.; et al. 2021, ApJ, accepted (arXiv:2107.13243)
10. *Jet collimation and acceleration in the giant radio galaxy NGC 315*
Park, J.; Hada, K.; Nakamura, M.; et al. 2021, ApJ, 909, 76
9. *GPCAL: a generalized calibration pipeline for instrumental polarization in VLBI data*
Park, J.; Byun, D.-Y.; Asada, K.; & Yun, Y. 2021, ApJ, 906, 85
8. *Kinematics of the M87 Jet in the Collimation Zone: Gradual Acceleration and Velocity Stratification*
Park, J.; Hada, K.; Kino, M.; et al. 2019, ApJ, 887, 147
7. *Ejection of Double knots from the radio core of PKS 1510–089 during the strong γ-ray flares in 2015*
Park, J.; Lee, S.-S.; Kim, J.-Y.; et al. 2019, ApJ, 877, 106
6. *Faraday Rotation in the Jet of M87 Inside the Bondi Radius: Indication of Winds from Hot Accretion Flows Confining the Relativistic Jet*
Park, J.; Hada, K.; Kino, M.; et al. 2019, ApJ, 871, 257
5. *Revealing the Nature of Blazar Radio Cores through Multifrequency Polarization Observations with the Korean VLBI Network*
Park, J.; Kam, M.; Trippe, S.; et al. 2018, ApJ, 860, 112
4. *The Long-Term Centimeter Variability of Active Galactic Nuclei: a New Relation between Variability Timescale and Accretion Rate*
Park, J. & Trippe, S. 2017, ApJ, 834, 157
3. *No asymmetric outflows from Sagittarius A* during the pericenter passage of the gas cloud G2*
Park, J.; Trippe, S.; Krichbaum, T. P.; et al. 2015, A&A, 576, L16
2. *Radio Variability and Random Walk Noise Properties of Four Blazars*
Park, J. & Trippe, S. 2014, ApJ, 785, 76
1. *Multiple Emission States in Active Galactic Nuclei*
Park, J. & Trippe, S. 2012, JKAS, 45, 147

Refereed Journal Articles – Co-Authorships

31. *Event Horizon Telescope observations of the jet launching and collimation in Centaurus A*
Janssen, Michael; Falcke, Heino; Kadler, Matthias; ...; **Event Horizon Telescope Collaboration**; et al. 2021, Nature Astronomy, in press
30. *A Detailed Kinematic Study of 3C 84 and Its Connection to Gamma-Rays*
Hodgson, Jeffrey A.; Rani, Bindu; Oh, Junghwan; ...; **Park, J.**; et al. 2021, ApJ, 914, 43
29. *Interferometric Monitoring of Gamma-ray Bright AGNs: Measuring the Magnetic Field Strength of 4C +29.45*
Kang, S.; Lee, S. -S.; Hodgson, J.; ...; **Park, J.**; et al. 2021, A&A, 651, A74
28. *Constraints on Black-hole Charges with the 2017 EHT Observations of M87**
Kocherlakota, Prashant; Rezzolla, Luciano; Falcke, Heino; ...; **Event Horizon Telescope Collaboration**; et al. 2021, PhRvD, 103, 4047

27. *The Polarized Image of a Synchrotron-emitting Ring of Gas Orbiting a Black Hole*
Narayan, Ramesh; Palumbo, Daniel C. M.; Johnson, Michael D.; ...; **Event Horizon Telescope Collaboration**; et al. 2021, ApJ, 912, 35

26. *East Asian VLBI Network Observations of Active Galactic Nuclei Jets: Imaging with KaVA+Tianma+Nanshan*
Cui, Yuzhu; Hada, Kazuhiro; Kino, Motoki; ...; **Park, J.**; et al. 2021, RAA, 21, 205

25. *Broadband Multi-wavelength Properties of M87 during the 2017 Event Horizon Telescope Campaign*
EHT MWL Science Working Group; et al. 2021, ApJ, 911, 11

24. *Polarimetric Properties of Event Horizon Telescope Targets from ALMA*
Goddi, Ciriaco; Marti-Vidal, Ivan; Messias, H.; ...; **Event Horizon Telescope Collaboration**; et al. 2021, ApJ, 910, 14

23. *First M87 Event Horizon Telescope Results. VIII. Magnetic Field Structure near the Event Horizon*
Event Horizon Telescope Collaboration; et al. 2021, ApJ, 910, 13

22. *First M87 Event Horizon Telescope Results. VII. Polarization of the Ring*
Event Horizon Telescope Collaboration; et al. 2021, ApJ, 910, 12

21. *Gravitational Test beyond the First Post-Newtonian Order with the Shadow of the M87 Black Hole*
Psaltis, Dimitrios; Medeiros, Lia; Christian, Pierre; ...; **Event Horizon Telescope Collaboration**; et al. 2020, PhRvL, 125, 1104

20. *Interferometric Monitoring of Gamma-Ray Bright AGNs: OJ 287*
Lee, Jee Won; Lee, Sang-Sung; Algaba, Juan-Carlos; ...; **Park, J.**; et al. 2020, ApJ, 902, 104

19. *Monitoring the Morphology of M87* in 2009-2017 with the Event Horizon Telescope*
Wielgus, Maciek; Akiyama, Kazunori; Blackburn, Lindy; ...; **Event Horizon Telescope Collaboration**; et al. 2020, ApJ, 901, 67

18. *Event Horizon Telescope imaging of the archetypal blazar 3C 279 at an extreme 20 microarcsecond resolution*
Kim, Jae-Young; Krichbaum, Thomas P.; Broderick, Avery E.; ...; **Event Horizon Telescope Collaboration**; et al. 2020, A&A, 640, 69

17. *Verification of Radiative Transfer Schemes for the EHT*
Gold, Roman; Broderick, Avery E.; Younsi, Ziri; ...; **Event Horizon Telescope Collaboration**; et al. 2020, ApJ, 897, 148

16. *THEMIS: A Parameter Estimation Framework for the Event Horizon Telescope*
Broderick, Avery E.; Gold, Roman; Karami, Mansour; ...; **Event Horizon Telescope Collaboration**; et al. 2020, ApJ, 897, 139

15. *Linear Polarization in the Nucleus of M87 at 7 mm and 1.3 cm*
Kravchenko, E.; Giroletti, M.; Hada, K.; Meier, D. L.; Nakamura, M.; **Park, J.**; Walker, R. C. 2020, A&A, 637, 6

14. *Exploring the Morphology and Origins of the 4C 38.41 Jet*
Algaba, J. C.; Rani, B.; Lee, S.-S.; Kino, M.; **Park, J.**; Kim, J.-Y. 2019, ApJ, 886, 85

13. *Jet Kinematics of the Quasar 4C+21.35 from Observations with the KaVA Very Long Baseline Interferometry Array*
Lee, T.; Trippe, S.; Kino, M.; ...; **Park, J.**; et al. 2019, MNRAS, 486, 2412

12. *Source-Frequency Phase-Referencing Observation of AGNs with KaVA using Simultaneous Dual-Frequency Receiving*
Zhao, G.-Y.; Jung, T.; Sohn, B. W.; ...; **Park, J.**; et al. 2019, JKAS, 52, 23
11. *Exploring the Nature of the 2016 γ-ray Emission in the Blazar 1749+096*
Kim, D.; Trippe, S.; Lee, S.-S.; ...; **Park, J.**; et al. 2018, MNRAS, 480, 2324
10. *Exploring the Variability of the Flat-spectrum Radio Source 1633+382. II. Physical Properties*
Algaba, J.-C.; Lee, S.-S.; Rani, B.; ...; **Park, J.**; et al. 2018, ApJ, 859, 128
9. *KVN Observations Reveal Multiple γ-ray Emission Regions in 3C 84?*
Hodgson, J. A.; Rani, B.; Lee, S.-S.; ...; **Park, J.**; et al. 2018, MNRAS, 475, 368
8. *Exploring the Variability of the Flat-spectrum Radio Source 1633+382. I. Phenomenology of the Light Curves*
Algaba, J.-C.; Lee, S.-S.; Kim, D.; ...; **Park, J.**; et al. 2018, ApJ, 852, 30
7. *The Power of Simultaneous Multi-frequency Observations for mm-VLBI: Beyond Frequency Phase Transfer*
Zhao, G.-Y.; Algaba, J.-C.; Lee, S.-S.; ...; **Park, J.**; et al. 2018, AJ, 155, 26
6. *The Millimeter-Radio Emission of BL Lacertae during Two γ-ray Outbursts*
Kim, D.; Trippe, S.; Lee, S.-S.; **Park, J.**; et al. 2017, JKAS, 50, 167
5. *Pilot KaVA monitoring on the M 87 jet: Confirming the inner jet structure and superluminal motions at sub-pc scales*
Hada, K.; **Park, J.**; Kino, M.; et al. 2017, PASJ, 69, 71
4. *Interferometric Monitoring of γ-ray Bright AGNs. I. The Results of Single-epoch Multifrequency Observations*
Lee, S.-S.; Wajima, K.; Algaba, J.-C.; ...; **Park, J.**; et al. 2016, ApJS, 227, 8
3. *PAGaN II: The Evolution of AGN Jets on Sub-Parsec Scales*
Oh, J.; Trippe, S.; Kang, S.; ...; **Park, J.**; et al. 2015, JKAS, 48, 299
2. *PAGaN I: Multi-Frequency Polarimetry of AGN Jets with KVN*
Kim, J.; Trippe, S.; Sohn, B. W.; ...; **Park, J.**; et al. 2015, JKAS, 48, 285
1. *Interferometric Monitoring of γ-ray Bright Active Galactic Nuclei II: Frequency Phase Transfer*
Algaba, J.-C.; Zhao, G.-Y.; Lee, S.-S.; ...; **Park, J.**; et al. 2015, JKAS, 48, 237

Non-Refereed Journal Articles – Co-Authorships

1. *White Paper on East Asian Vision for mm/submm VLBI: Toward Black Hole Astrophysics down to Angular Resolution of $1R_S$*
Asada, K., Kino, M., Honma, M., ...; **Park, J.**, et al. 2017, arXiv:1705.04776

Observatories Used

Very Large Array (VLA)

Karl G. Jansky VLA (JVLA)

Korean VLBI Network (KVN)

KVN and VERA Array (KaVA)

East Asia VLBI Network (EAVN)

High Sensitivity Array (HSA)

Very Long Baseline Array (VLBA)

Global Millimeter VLBI Array (GMVA)

Atacama Large Millimeter Array (ALMA)

Fermi Large Array Telescope (*Fermi*-LAT)

Successful Proposals as PI

GMVA Semester 2021B Proposal VLBA/21B-078 for **12 hours**
: Is shear acceleration at work in the jets of NGC 315?

HSA/VLBA Semester 2021B Proposal VLBA/21B-075 for **57.5 hours**
: Testing the MHD model of AGN jet acceleration

VLBA Semester 2020B Proposal VLBA/20B-116 for **64 hours**
: Towards a complete understanding of jet acceleration & energy dissipation in M87

EAVN Semester 2020A Proposal EAVN20A-143 for **54 hours**
: Investigating the peculiar jet collimator NGC 315

KVN Semester 2020A Proposal KVN20A-VLBI-144 for **75 hours**
: The Global VLBI Polarimetry Campaign for M87 in 2020

VLBA Semester 19B Proposal VLBA/19B-143 for **12 hours**
: Investigating the peculiar jet collimator NGC 315

HSA Semester 19B Proposal VLBA/19B-108 for **36 hours**
: Mapping the Faraday rotation and the magnetic field of the M87 jet

EAVN Semester 2019B Proposal EAVN19B-094 for **36 hours**
: Investigating the peculiar jet collimator NGC 315

KVN Semester 2019B Proposal KVN19B-VLBI-095 for **68 hours**
: Probing the Faraday rotation near the jet base of M87

KaVA Semester 2018A Proposal KaVA18A-01 for **48 hours**
: Solving the puzzling kinematics of the flat spectrum radio quasar 1928+738

KVN Semester 2018A Proposal KVN18A-VN-01 for **96 hours**
: Unveiling the hidden core polarization in 3C 273

KaVA Semester 2017B Proposal KaVA17A-01 for **36 hours**
: Solving the puzzling kinematics of the flat spectrum radio quasar 1928+738

KVN Semester 2017B Proposal KVN17B-VN-01 for **48 hours**
: Revealing the Nature of Blazar Radio Cores through Multi-frequency Polarization Observations with ALMA and KVN

KaVA Semester 2017A Proposal KaVA17A-01 for **40 hours**
: Solving the puzzling kinematics of the flat spectrum radio quasar 1928+738

ALMA Cycle 4 Proposal 2016.1.00112.S for **3 hours**
: Probing the magnetic fields in the jet base of the gamma-ray bright blazar PKS 1510-08

Selected Conferences and Seminars

24. Invited Colloquium, *Magnetic field structure near the event horizon of the M87 black hole*
Seoul National University, Seoul, South Korea, May 13, 2021
23. Contributed Talk, *GPCAL: a new calibration pipeline for instrumental polarization in VLBI data*
13th East Asian VLBI Workshop 2021, Chiang Mai, Thailand (online), Mar 2–5, 2021
22. Contributed Talk, *Kinematics of the M87 Jet in the Collimation Zone: Gradual Acceleration and Velocity Stratification*
COSPAR 2021, 43rd COSPAR Scientific Assembly, Sydney, Australia (online), Jan 28–Feb 4, 2021
21. Invited Talk, *Prospect of Polarization Observations of M87 with the EHT & Jet Collimation and Acceleration in the Giant Radio Galaxy NGC 315*
Black Hole Astrophyusics with VLBI: Multi-Wavelength and Multi-Messenger Era, Institute for Cosmic Ray Research, the University of Tokyo, Tokyo, Japan (online), Jan 18–20, 2021
20. Invited Colloquium, *Collimation and Acceleration of the M87 jet (and more)*
National Tsing-Hua University (NTHU), Hsinchu, Taiwan, Dec 11, 2020
19. Contributed Talk, *Preliminary reduction of the 2018-Rev0 data*
The Event Horizon Telescope Collaboration Meeting 2020, online, Dec 4–14, 2020
18. Colloquium, *Acceleration and Collimation of the M87 Jet*
Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), Taipei, Taiwan, Jan 15, 2020
17. Contributed Talk, *Kinematics of the M87 jet in the collimation zone: gradual acceleration and velocity stratification*
The Event Horizon Telescope Collaboration Meeting 2019, Naniloa Hotel, Hilo, Hawaii, USA, Dec 2–6, 2019
16. Contributed Talk, *M87 Polarization and RM at low frequencies*
The Event Horizon Telescope Collaboration Meeting 2019, Naniloa Hotel, Hilo, Hawaii, USA, Dec 2–6, 2019
15. Contributed Talk, *A new strategy for polarization calibration of VLBI data and an improved view of linear polarization of AGN jets at millimeter wavelengths*
12th East Asian VLBI Workshop, Ibaraki University, Mito, Ibaraki, Japan, Sep 23–27, 2019

14. Invited Talk, *Faraday Rotation in the Jet of M87 Inside the Bondi Radius: Indication of Winds from Hot Accretion Flows Confining the Relativistic Jet*
EATING VLBI Workshop 2019, CNS Research Area, Bologna, Italy, Apr 15–17, 2019
13. Colloquium, *Faraday Rotation in the Jet of M87 Inside the Bondi Radius: Indication of Winds from Hot Accretion Flows Confining the Relativistic Jet*
Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), Taipei, Taiwan, Jan 17, 2019
12. Contributed Talk, *Substantial Winds from the accreting supermassive black hole in M87 revealed by Faraday rotation observations*
14th European VLBI Network Symposium & Users Meeting, Granada, Spain, Oct 8–11, 2018
11. Contributed Talk, *Detection of a Moving Spine-Sheath Jet Structure after a VHE γ-ray Flare in PKS 1510-089 in 2015*
East Asian VLBI Workshop 2018, YongPyong Resort, PyeongChang, Korea, Sep 04–07, 2018
10. Contributed Talk, *Substantial Winds from Hot Accretion flows Confining the Relativistic Jet of M87*
IAU Symposium 342 – Perseus in Sicily: from Black Hole to Cluster Outskirts, Noto, Sicily, Italy, May 13–18, 2018
9. Invited Talk, *Substantial Outflows from Hot Accretion flows Confining the Relativistic Jet of M87*
Dawn of a New Era for Black Hole Jets in Active Galaxies, Tohoku University, Sendai, Japan, Jan 25–27, 2018
8. Contributed Talk, *Revealing the Nature of Blazar Radio Cores through Multi-Frequency Polarization Observations with KVN*
East Asia To Italy: Nearly Global (EATING) VLBI Workshop 2017, Hotel Bareve, Jeju, Korea, Oct 30–Nov 1, 2017
7. Colloquim, *Revealing the Nature of Blazar Radio Cores through Multi-Frequency Polarization Observations with KVN and ALMA*
Korea Astronomy and Space Science Institute (KASI), Daejeon, Korea, Aug 31, 2017
6. Contributed Talk, *Revealing the Nature of Blazar Radio Cores through Multi-Frequency Polarization Observations with KVN*
When Brandeis met Jansky: Astrophysics and beyond, Brandeis University, Boston, USA, Jun 28–30, 2017
5. Invited Talk, *Probing the Velocity Field in the Inner Region of M87 Jets with a KaVA Large Program: Early Science Results*
Challenges of AGN Jets, National Astronomical Observatory of Japan (NAOJ), Mitaka, Tokyo, Japan, Jan 17–20, 2017
4. Contributed Talk, *Probing the Velocity Field in the Inner Region of M87 Jets with a KaVA Large Program: Early Science Results*
9th East Asian VLBI Workshop, Forest Moon Hotel, Guiyang, Guizhou, China, Nov 07–11, 2016
3. Contributed Talk, *Probing the Velocity Field in the Inner Region of M87 Jets with a KaVA Large Program: Early Science Results*
East-Asia AGN Workshop 2016, Seoul National University, Seoul, Korea, Sep 22–24, 2016

2. Contributed Talk, *The plasma physics of Active Galactic Nuclei (PAGaN) : Polarimetry with KVN*
8th East Asian VLBI Workshop, Hokkaido University, Sapporo, Hokkaido, Japan, July 6–10, 2015

1. Contributed Talk, *Radio Variability and Random Walk Noise Properties of Four Blazars*
12th Asia-Pacific Regional IAU Meeting (APRIM), DCC, Daejeon, Korea, Aug 18–22, 2014

Computer Skills

Programming Language: Python, IDL, AIPS, Difmap, CASA

Development of Astronomical Software Packages

GPCAL: An Open-source instrumental polarization calibration pipeline for VLBI data (github)

Teaching Experience

- *Man and the Universe*, Teaching Assistant for Prof. Sascha Trippe, Spring 2014
- *Man and the Universe*, Teaching Assistant for Prof. Hyung-Mok Lee, Fall 2013
- *Astronomical Lab Experiments*, Teaching Assistant for Prof. Woong-Tae Kim, Spring 2013

Academic Service

Conferences and Workshops:

- EHT Imaging Workshop 2020, a remote workshop, May 11–15, 2020 (SOC)
- The 4th KVN-VERA Science Working Group Meeting, Seoul National University, Seoul, Korea, Jan 29–30, 2013 (LOC)

Collaborations:

- EHT Data Access, Analysis, and Publication Policy (DAAPP) Task Force committee

Reviews:

- The National Radio Astronomy Observatory (NRAO) 2022A proposal review panelist
- The Astrophyiscal Journal Letters, 2021

Mentoring

- Ph. D. student Kunwoo Lee at Seoul National University for his project "Jet collimation and acceleration of the flat spectrum radio quasar 1928+738" since 2017

Other Experience

Military Service: Served as a Techincal Research Personnel in the Republic of Korea Army, 2016-2019

Departmental Service:

- Full-time lecturer for a short course on *VLBI Polarization Data Reduction*, SNU, Nov 17, 2017
- President of Graduate Students in SNU Astronomy Department, 2016
- SNU Astronomy Journal Club Participants, 2013–2016
- President of the club "Amateur Astronomy Association (AAA)" in SNU (∼100 new members every year), 2010–2011

Outreach:

- Volunteered for 2019 Academia Sinica Open House, Oct 26, 2019
- Volunteered multiple times (>50 times) for Astronomy Open House, 2009–2018

Academic References

- **Prof. Sascha Trippe**
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  Department of Physics and Astronomy
  Seoul National University
  +82-2-880-6611

- **Dr. Kazuhiro Hada**
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  Mizusawa VLBI Observatory
  National Astronomical Observatory of Japan

- **Dr. Masanori Nakamura**
  nakamura@asiaa.sinica.edu.tw
  National Institute of Technology, Hachinohe College

- **Dr. Motoki Kino**
  motoki.kino@nao.ac.jp
  Kogakuin University
  National Astronomical Observatory of Japan

- **Prof. Mareki Honma**
  mareki.honma@nao.ac.jp
  Mizusawa VLBI Observatory
  National Astronomical Observatory of Japan

- **Dr. Geoffrey Bower**
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  Academia Sinica Institute of Astronomy and Astrophysics
  EHT Project Scientist