NHFP Einstein Fellow
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RESEARCH INTERESTS

Astrophysical black holes, accretion flow mechanisms, interstellar medium, Galactic Center, computational imaging, very long baseline interferometry.

EDUCATION

PhD in Astrophysics, Radboud University 2017 – 2021
Thesis title: *"Lifting the Veil on Black Holes: Approaching the Event Horizon with High Resolution Imaging"* supervised by Prof. H. Falcke *(cum laude)*

MSc in Physics & Astronomy, Radboud University 2015 – 2017
Thesis title: *"VLBA imaging of 3mm SiO masers near Orion Source I" (cum laude)*

BSc in Physics, McGill University 2012 – 2015

RESEARCH AND TEACHING EXPERIENCE

Student Supervision
Kim Alonso, *SAO intern* planned for 2024
Erandi Chavez, *Harvard University* 2021 – present
Noemi La Bella, *Radboud University* 2020 – present

NHFP Einstein Fellow, *Center for Astrophysics | Harvard & Smithsonian* 2021 – present
NASA Hubble Fellowship on *"Connecting Black Hole Shadows to Multi-wavelength Accretion and Outflow Physics"*

Member of the Event Horizon Telescope Collaboration 2015 – present

Lecturer 2022 – present
Lorentz School on the Fundamentals of the Universe – Black Holes on All Scales
SMA Interferometry School – Very Long Baseline Interferometry (2022 – 2023)

Graduate Teaching Assistant, *Faculty of Science, Radboud University* 2016 – 2020
Courses: Planetary Systems (2017 – 2020), Gas Dynamics (2017 – 2019), Observational Astronomy (2017 – 2019), Quantum Mechanics 2 (2016 – 2017)

Smithsonian Astrophysical Observatory Predoctoral Fellow 2018
Center for Astrophysics | Harvard & Smithsonian

RECENT HONORS AND AWARDS

Christiaan Huygens Science Prize 2022
EHT Thesis Award – Data Analysis Category 2021
L'Oreal Netherlands For Women In Science Rising Talent Prize (1st place) 2021
NASA Hubble Fellowship Program – Einstein Fellowship 2021
Sub-Millimeter Array Postdoctoral Fellowship (deferred to 2024) 2021
EHT Early Career Award – 2020
for contributions to the observations, array calibration, data validation, and imaging of the 2017 EHT data, leading to the results published in the first six EHT papers
Einstein Medal for EHT – as member of the EHT 2020
Breakthrough Prize in Fundamental Physics for EHT – as member of the EHT 2020
Radboud University Team Science Award – as member of RU EHT team 2019
NSF Diamond Achievement Award – as member of the EHT 2019
Radboud University Christine Mohrmann Stipend 2019
Radboud University Best Faculty of Science Thesis Prize 2018

RECENT SCIENTIFIC TALKS

Onsala Space Observatory Colloquium Oct 2023
JuliaCon 2023 Radio Interferometry Mini Symposium Talk Jul 2023
EAS EHT Special Session Talk Jul 2023
Bologna VLBI: Life Begins at 40! conference Invited Talk May 2023
Princeton Gravity Initiative/PCTS Workshop Invited Talk Feb 2023
Korean Astronomy & Space Institute Colloquium Nov 2022
Seoul National University Astronomy Colloquium Nov 2022
Yonsei University Astronomy Colloquium Nov 2022
Boston University Astronomy Colloquium Nov 2022
Tufts University Astronomy Colloquium Oct 2022
PyCon US 2022 Keynote Speaker Apr 2022
Galaxy Evolution Seminar, University of Oxford (remote) Oct 2021
HEASA conference Invited Talk (remote) Sept 2021
CASPER Workshop Invited Talk (remote) May 2021
COSPAR Invited Talk (remote) Jan 2021
NCAC Colloquium, Polish Academy of Sciences (remote) Oct 2020
Black Hole Initiative Colloquium, Harvard (remote) Sept 2020
McGill Space Institute Astronomy Seminar, McGill (remote) Sept 2020

EHT Special Session Speaker. 235th AAS, Hawaii, USA	Jan 2020
Invited Talk. Galactic Center Workshop, Yokohama, Japan	Oct 2019
Invited Keynote Talk. EuroSciPy 2019, Bilbao	Sept 2019

RECENT ACADEMIC SERVICE

EHTC Polarimetry Working Group Coordinator	Oct 2022 – present
NSERC Fellowship Selection Committee Member	2022 – present
Scientific Organizing Committee. COSPAR 2024 Session E1.18	Oct 2022–present
ASTRON SEP Evaluation Committee	Jun–Oct 2023
Scientific Organizing Committee. EAS 2023 Special Session 23	Sept 2022–Jul 2023
Scientific Organizing Committee. EHT collaboration meeting 2023	Jan – Jun 2023
Organizing Committee and lecturer. 2023 SMA Interferometry School	May 2023
Lecturer at the Lorentz School on Fundamentals of the Universe	Apr 2023
NASA Astrophysics Proposal Reviewer	2022
Organizer. Black Holes Across Space and Time (BLAST) Workshop	2021–2022
Organizing Committee Chair. Broadening Horizons ngEHT Workshop	Aug 2022
Organizing Committee and lecturer. 2022 SMA Interferometry School	Jan 2022
Scientific Organizing Committee. EAS 2021 Special Session 11.	Jan – June 2021
Scientific Organizing Committee. 3rd EHT Imaging Workshop (remote)	May 2020
Diversity and Inclusion Task Force. EHT Collaboration	2020 – 2022
Project Director Search Committee. EHT Collaboration	Nov 2019 – Mar 2020
Scientific Organizing Committee. EHT collaboration meeting 2019	Dec 2019
Scientific Organizing Committee. EHT Polarimetry Workshop	July 2019
Scientific Organizing Committee. EHT collaboration meeting 2018	Nov 2018
Organizing Committee. 2nd EHT Imaging Workshop	July 2018

RECENT OUTREACH

Guest on Bulletin Spatial documentary series (French)	Oct 2023
PBS Stargazers invited guest	Jun 2022
Black Hole PIRE Webinar Series on the Galactic Center Talk	Feb 2022
Talk for Ciencia en Bicicleta at the Planetario de Medellín. (Spanish, remote)	Aug 2021
Boston Museum of Science Panelist (remote)	May 2021
Yuri's Night World Space Party Turkey (remote)	Apr 2021
Guest Speaker, Telus Spark Camp Girls Heart Science (remote)	Aug 2020
Guest Speaker, Canadian Online Science Fair (remote)	June 2020
Keynote Speaker. '2020: A Space Odyssey' Symposium, Grinnell College, Iowa	Feb 2020
Invited Panelist. EHT panel at the Genoa Science Festival, Genoa, IT	Nov 2019
Invited Speaker. Flemish Amateur Astronomy Society, Brugges, BE	Oct 2019
Speaker. Public Lectures at the Museum Valkhof, Nijmegen, NL	Apr 2019

Articles submitted/published in peer-reviewed journals.

Journal acronym index: Astrophysical Journal (ApJ; impact factor 5.745), Astrophysical Journal Letters (ApJL; impact factor 8.374), Astrophysical Journal Supplement (ApJS; impact factor 7.950), Astronomy & Astrophysics (A&A; impact factor 5.636), Physics Review Letters (PRL; impact factor 8.385*), International Journal of Modern Physics D (IJMPD; impact factor 2.154)*

First author and primary collaboration articles.

EHT Collaboration et al. (under review) *First Sagittarius A* EHT Results. VII. Polarization of the Ring.* Under review. **Project lead and paper coordinator.**

EHT Collaboration et al. (under review) *First Sagittarius A* EHT Results. VIII. Physical Interpretation of the Polarized Ring.* Under review. **Project lead and contributor.**

S. Issaoun, D. Pesce, F. Roelofs, A. Chael, R. Dodson, M. Rioja, K. Akiyama, R. Aran, L. Blackburn, S.S. Doeleman, V. Fish, G. Fitzpatrick, M.D. Johnson, G. Narayanan, A. Raymond, R. Tilanus (2023) *Enabling Transformational ngEHT Science via the Inclusion of 86 GHz Capabilities.* Galaxies, Vol 11, 28.

S. Issaoun, M. Wielgus, S. Jorstad, T.P. Krichbaum, L. Blackburn, M. Janssen, C.K. Chan, EHT Collaboration et al. (2022) *Resolving the Inner Parsec of the Blazar J1924-2914 with the Event Horizon Telescope*, ApJ, 934, 145

EHT Collaboration et al. (2022b) *First Sagittarius A* EHT Results. II. EHT and Multiwavelength Observations, Data Processing, and Calibration.* ApJL, Vol. 930, L13. **Writing team.**

EHT Collaboration et al. (2022c) *First Sagittarius A* EHT Results. III. Imaging of the Galactic Center Supermassive Black Hole.* ApJL, Vol. 930, L14. **Writing team.**

EHT Collaboration et al. (2021a) *First EHT M87 Results. VII. Polarization of the Ring.* ApJL, Volume 910, L12. **Member of the core writing team.**

S. Issaoun, M. D. Johnson, L. Blackburn, A. Broderick, P. Tiede, M. Wielgus, S.S. Doeleman, H. Falcke + others (2021) *Persistent Non-Gaussian Structure in the Image of Sagittarius A* at 86 GHz.* ApJ, Volume 915, 99.

S. Issaoun, M. D. Johnson, L. Blackburn, M. Mościbrodzka, A. Chael, H. Falcke (2019) *VLBI* i*maging of black holes via second moment regularization.* A&A, 629, A32.

EHT Collaboration et al. (2019a) *First EHT M87 Results. I. The Shadow of the Supermassive Black Hole.* ApJL, Volume 875, L1. **Contributor.**

EHT Collaboration et al. (2019b) *First EHT M87 Results. II. Array and Instrumentation.* ApJL, Volume 875, L2. **Contributor.**

EHT Collaboration et al. (2019c) *First EHT M87 Results. III. Data Processing and Calibration.* ApJL, Volume 875, L3. **One of three paper coordinators and main authors.**

EHT Collaboration et al. (2019d) *First EHT M87 Results. IV. Imaging the Central Supermassive Black Hole.* ApJL, Volume 875, L4. **Member of the core writing team.**

S. Issaoun, M. D. Johnson, L. Blackburn, C. D. Brinkerink, M. Mościbrodzka, A. Chael, C. Goddi, I. Marti-Vidal, J. Wagner, S. S. Doeleman, H. Falcke, T. P. Krichbaum,+ 32 others (2019) *The Size, Shape and Scattering of Sagittarius A* at 86 GHz: First VLBI with ALMA.* ApJ, Volume 871, 30.

S. Issaoun, C. Goddi, L.D. Matthews, L.J. Greenhill, M.D. Gray, E.M.L. Humphreys, C.J. Chandler, M. Krumholz, H. Falcke (2017) *VLBA imaging of the 3mm SiO masers in the disk-wind of the high-mass protostellar system Orion Source I.* A&A, Volume 606, A126.

Selection of other articles.

M. Wielgus, **S. Issaoun,** I. Marti-Vidal, R. Emami, C.D. Brinkerink, C. Goddi, E. Fomalont (2023) *The internal Faraday screen of Sagittarius A*.* Under review at A&A, eprint arXiv:2308.11712.

N. La Bella, **S. Issaoun**, F. Roelofs, C. Fromm, H, Falcke (2023) *Expanding Sgr A* dynamical imaging capabilities with an African extension to the Event Horizon Telescope.* A&A, Vol. 672, A16.

A. Chael, **S. Issaoun**, D.W. Pesce, M.D. Johnson, A. Ricarte, C. Fromm, Y. Mizuno (2023) *Multifrequency Black Hole Imaging for the Next-generation Event Horizon Telescope.* ApJ, Vol. 945, 40.

S. Jorstad, M. Wielgus, R. Licco, **S. Issaoun**, A. Broderick, D.W. Pesce, EHT Collaboration et al. (2023) *The Event Horizon Telescope Image of the Quasar NRAO 530.* ApJ, Vol. 943, 170.

H. Okino, K. Akiyama, K. Asada, J.L. Gomez, K. Hada, M. Honma, T.P. Krichbaum, M. Kino, H. Nagai, U. Bach, L. Blackburn, K.L. Bouman, A. Chael, G.B. Crew, S.S. Doeleman, V.L. Fish, C. Goddi, **S. Issaoun**, MD. Johnson, S. Jorstad, +15 authors (2022) *Collimation of the Relativistic Jet in the Quasar 3C 273*. ApJ, Vol. 940., 65.

M. Wielgus, N. Marchili, I. Marti-Vidal, G. Keating, V. Ramakrishnan, P. Tiede, E. Fomalont, **S. Issaoun**, J. Nielsen, M. Nowak, EHT Collaboration et al. (2022) *Millimeter Light Curves of Sagittarius A* Observed during the 2017 Event Horizon Telescope Campaign.* ApJL, Vol. 930, L19.

I. Cho, G.-Y. Zhao, T. Kawashima, M. Kino, K. Akiyama, M.D. Johnson, **S. Issaoun,** K. Moriyama, + 57 authors (2022) *The Intrinsic Structure of Sagittarius A* at 1.3 cm and 7 mm.* ApJ, Vol. 926, 108.

M. Janssen, H. Falcke, M. Kadler, E. Ros, M. Wielgus, K. Akiyama, M. Balokovic, L. Blackburn, K.L. Bouman, A. Chael, C.-K. Chan, K. Chatterjee, J. Davelaar, P.G. Edwards, C. Fromm, J.L. Gomez, C. Goddi, **S. Issaoun**, M.D. Johnson, J. Kim, EHT Collaboration et al. (2021) *Event Horizon Telescope observations of the jet launching and collimation in Centaurus A*. Nature Astronomy, Vol 5 1017.

M. Wielgus, K. Akiyama, L. Blackburn, C.-K. Chan, J. Dexter, S. S. Doeleman, V. L. Fish, **S. Issaoun,** M. D. Johnson, T. P. Krichbaum, R.-L. Lu, D. W. Pesce, G. N. Wong, EHT Collaboration et al. (2020) *Monitoring the Morphology of M87* in 2009-2017 with the Event Horizon Telescope.* ApJ, Volume 901, Issue 1, 67.

J.Y. Kim, T. P. Krichbaum, A. E. Broderick, M. Wielgus, L. Blackburn, J. L. Gómez, M. D. Johnson, K. L. Bouman, A. Chael, K. Akiyama, S. Jorstad, A. P. Marscher, **S. Issaoun**, M. Janssen, C.-K. Chan, T. Savolainen, D. W. Pesce, F. Özel, EHT Collaboration et al. (2020) *Event Horizon Telescope imaging of the archetypal blazar 3C 279 at an extreme 20 microarcsecond resolution.* A&A, Volume 640, A69.

L. Blackburn, C.-K. Chan, G. B. Crew, V. L. Fish, **S. Issaoun,** M. D. Johnson, M. Wielgus, K. Akiyama, J. Barrett, K. L. Bouman, R. Cappallo, A. A. Chael, M. Janssen, C. J. Lonsdale, S. S. Doeleman (2019) *EHT-HOPS pipeline for millimeter VLBI data reduction.* ApJ, Volume 882, 23.

C. D. Brinkerink, C. Müller, H. D. Falcke, **S. Issaoun,** K. Akiyama, G. C. Bower, T. P. Krichbaum, A. T. Deller, E. Castillo, S. S. Doeleman, R. Fraga-Encinas, C. Goddi, A. Hernández-Gómez,D. H. Hughes, M. Kramer, J. Léon-Tavares, L. Loinard, A. Montaña, M. Mościbrodzka, G. N. Ortiz-León, D. Sanchez-Arguelles,R. P. J. Tilanus, G. W. Wilson, A. Zensus (2019) *Micro-arcsecond structure of Sagittarius A* revealed by high-sensitivity 86 GHz VLBI observations.* A&A, Volume 621, A119.

Collaboration memos and documentation.*

S. Steel, M. Wielgus, L. Blackburn, **S. Issaoun,** M. D. Johnson (2019) *Global calibration of instrumental polarimetric phase gains.* Memo CE-2019-03 for the EHT project.

M. Wielgus, L. Blackburn, **S. Issaoun,** M. Janssen, M. D. Johnson, J.-Y. Koay (2019) *EHT data set validation and characterization of errors.* Memo CE-2019-02 for the EHT project.

M. Janssen, L. Blackburn, **S. Issaoun,** T. P. Krichbaum, M. Wielgus (2019) *Flux Density Calibration of the EHT Array.* Memo CE-2019-01 for the EHT project.

S. Issaoun, H. Falcke, P. Friberg, M. Janssen, R. Tilanus, J. Wouterloot (2018) *James Clerk Maxwell Telescope Calibration Memo: Time dependence of the aperture efficiency and DPFU*. Memo CE-2018-01 for the EHT project.

S. Issaoun, T.W. Folkers, D.P. Marrone, J. Kim, L. Blackburn, H. Falcke (2017) *Sub-Millimeter Telescope Calibration Memo 3: A comprehensive look at the absolute amplitude calibration procedure.* Memo CE-2017-03 for the EHT project.

S. Issaoun, T.W. Folkers, L. Blackburn, D.P. Marrone, T. Krichbaum, M. Janssen, I. Marti-Vidal, H. Falcke (2017) *A conceptual overview of single-dish absolute amplitude calibration.* Memo CE-2017-02 for amplitude calibration of EHT observations.

S. Issaoun, T.W. Folkers, H. Falcke (2016) *Sub-Millimeter Telescope Calibration Memo 2: Using 1.3 mm Single-Dish Continuum Observations of April 2016.* Memo CE-2017-01 for the EHT.

S. Issaoun, H. Falcke (2016) *Sub-Millimeter Telescope Calibration Memo 1: Using 1.3 mm Single-Dish Continuum Observations of March 2015.* Memo CE-2016-01 for the EHT project.

**Note: Collaboration memos are supplementary documentation for Event Horizon Telescope operations, analysis and science results hosted on our official website (www.eventhorizontelescope.org/for-astronomers/memos) .*