Seiji Fujimoto

Curriculum Vitae

Department of Astronomy
The University of Texas at Austin
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Work Experience

2022–present **NASA Hubble Fellow**, *UT Austin*, USA

2021–2022 **Marie Skłodowska-Curie COFUND INTERCTIONS Fellow**, *Cosmic Dawn Center*, Denmark

2019–2022 **DAWN Fellow**, *Cosmic Dawn Center*, Denmark

2019–2019 **ALMA Project Researcher**, *NAOJ / Universtiy of Waseda*, Japan

2019–2019 **ICRR Project Researcher**, *University of Tokyo*, Japan

Education

2016–2019 **PhD in Astronomy**, *Graduate school of Science, Department of Astronomy, University of Tokyo*
Thesis: Demographics of the cold Universe with ALMA: From Interstellar and Circumgalactic Media to Cosmic Structures (advisor: Prof. M. Ouchi)

2014–2016 **Master of Astronomy**, *Graduate school of Science, Department of Astronomy, University of Tokyo*
Thesis: ALMA Faint-mm Sources Down to 0.02 mJy: Physical Origins and Contribution to the Extragalactic Background Light (advisor Prof. M. Ouchi)

2010–2014 **Bachelor of Astronomy**, *Department of Astronomy, University of Tokyo*
Thesis: Search for Dusty Starburst Galaxies at $z > 6$ (advisor: Prof. K. Kohno)

Awards & Prizes

2023 **The ASJ Young Astronomer Award Recipients**[1]

2022 **NASA Hubble Fellowship**

2022 **Inoue Research Award for Young Scientists**

2021 **Marie Skłodowska-Curie Actions (MSCA) Seal of Excellence**

2019 **University of Tokyo School of Science Research Award for PhD Thesis**

2019 **Springer Thesis Prize**

2016 **University of Tokyo School of Science Research Award for Master Thesis**

2016 **Institute for Cosmic Ray Research President's Award for Master Thesis** [2]

2015 **University of Tokyo President's Award**

1. Annual award to the best Japanese astronomer under the age of 35.
2. Annual award to the best Master Thesis from Prof. T. Kajita (Nobel Prizer in Physics 2015)

Research Grant & Funding

2024–present **NASA JWST Cycle2 PI Data Award**, USD 63,617

2023–2024 **NASA Hubble Fellowship Year 2**, USD 134,378

2022–2023 **NASA Hubble Fellowship Year 1**, USD 144,517

2022–present **NASA JWST Cycle1 PI Data Award**, USD 85,945, (US Admin E. Egami)

2022–2024 **NASA Keck PI Data Award**, USD 28,725

2021–2022 **INTERACTIONS Fellowship Grant**, USD 123,000

2016–2019 **JSPS Research Fellowship Grant**, *No.16J02344*, USD 92,000

2015–2019 **EA ALMA PI Grant for research mobility**, *No. NAOJ-ALMA-145, 164, 179, 197, 231*, USD 12,000

2015–2019 **Yukio Hayakawa Fund for research mobility** , *No. 89, 95, 106*, USD 92,000

2017 **Graduate Research Fund for research mobility awarded by University of Tokyo**, USD 5,000

Awarded Telescope Proposals

Principal Investigator **N = 40 (incl. 6 DDT)**

1 **JWST**, *GO Cycle 1 1567*, 12.3 hrs
Early Galaxy Assembly Uncovered with ALMA and JWST: A Remarkably UV and [CII] Bright, Strongly Lensed Sub-$L^\star$ Galaxy at $z = 6.072$

2 **JWST**, *GO Cycle 2 4573*, 4.5 hrs
IFU Trio of ALMA, MUSE, JWST: Revealing Dynamical Interplay of Inflow/Outflow at $z = 6$ with Strong Lensing Aid

3 **ALMA DDT**, *2021.A.00031.S*, 1.0 hrs
The puzzling JWST object timely disentangled by ALMA: Dusty starburst at $z \sim 5$ or Ultra high-z galaxy at $z \sim 17$?

4 **ALMA DDT**, *2021.A.00022.S*, 4.6 hrs
Establishing the Golden Reference of Early Galaxy Studies at $z \sim 8 - 9$ with [OIII]4363 detection in JWST ERO

5 **ALMA DDT**, *2021.A.00006.S*, 2.8 hrs
Spectroscopic confirmation of a strongly lensed star at $z = 6$

6 **ALMA**, *2023.1.00149.S*, 16.7 hrs
IFU Trio of ALMA, MUSE, JWST: Revealing Dynamical Interplay of Inflow/Outflow at $z = 6$ with Strong Lensing Aid

7 **ALMA**, *2023.1.00802.S*, 20.4 hrs
Deep Dive into the ISM at z=6 with ALMA + JWST: From the Individual Lensed Star to 1-20pc Star-Forming Clumps

8 **ALMA**, *2022.1.00073.S*, 37 hrs
A joint ALMA and JWST public Legacy Field - Abell 2744

9 **ALMA**, *2022.1.00195.S*, 27 hrs
Where does [CII]158um originate? A panchromatic ~20-pc scale view of ISM in a sub-L* galaxy at $z = 6$ by ALMA and JWST

10 **ALMA**, *2022.1.00433.S*, 25 hrs
Golden Reference for Metallicity Measurements at $z = 6 - 7$ by ALMA+JWST

11 **ALMA**, *2022.1.01567.S*, 20 hrs
Dust in galaxies at $z = 8 - 11$

12 **ALMA**, *2021.1.00055.S*, 17 hrs
Comprehensive ISM view down to a ∼100 pc scale for a sub-$L^\star$ galaxy at $z = 6$ by ALMA, JWST, and JVLA

13 **ALMA**, *2021.1.00236.S*, 19 hrs
Golden Reference for Metallicity Measurements at $z = 6 - 7$ by ALMA+JWST

14 **ALMA**, *2019.2.00050.S*, 42 hrs
ALMA Exploration for a Remarkable Protocluster at $z = 5.69$

15 **ALMA**, *2019.1.00672.S*, 12 hrs
First 3D-Illustration of the Ionized+Neutral Gas Down to 300-pc Scale Surrounding a Super Massive Black Hole at $z = 6.039$

16 **ALMA**, *2019.1.00236.S*, 10 hrs
Strongly Lensed HST-dark Object Discovered by ALMA Lensing Cluster Survey

17 **ALMA**, *2017.1.00531.S*, 18 hrs
ALMA Exploration for $z = 5.69$, 6.01, and 6.57 Protoclusters

18 **NASA Keck**, *2022B_N077*, 1 night
Physical Origin of the High [OIII]88um/[CII]158um Ratios in High-z Star-forming Galaxies Uncovered with JWST+ALMA+Keck

19 **NASA Keck**, *2024A_N025*, 1 night
Physical Origin of the High [OIII]88um/[CII]158um Ratios in High-z Star-forming Galaxies Uncovered with JWST+ALMA+Keck

20 **VLT/Xshooter**, *108.22MK*, 26 hrs
Beasts in the Bubbles: Remarkably UV-bright Galaxies at z=9-10

21 **VLT/MUSE**, *109.22VV*, 8.9 hrs
IFU Trio of JWST, ALMA, and MUSE: Where is Lyα escaping?

22 **Subaru/SWIMS**, *S22A0094N*, 3 nights
Weighing the black hole in a young quasar at $z = 7.2$

23 **Subaru/SWIMS**, *S21B0108N*, 2 nights
Beasts in the Bubbles: Remarkably UV-bright Galaxies at $z = 9 - 10$

24 **Subaru/FOCAS IFU**, *S20A0045N*, 1.5 nights
Unveiling the Connection between 10-kpc Lyα and [CII] Halos at $z = 6.033$

25 **Subaru/FOCAS**, *S20B0150S*, 0.5 night
Most Massive Black Hole at $z > 6$ Mimicked by Strong Lensing?

26 **Subaru/MOIRCS**, *S16A0033N*, 1.5 nights
Uncovering the New Class of ALMA Sources Assisted by Gravitational Lensing

27 **NOEMA DDT**, *D22AC*, 10 hrs
The puzzling JWST object timely disentangled by ALMA: Dusty starburst at $z \sim 5$ or Ultra high-z galaxy at $z \sim 17$?

28 **NOEMA DDT**, *E19AD*, 4.6 hrs
Gas and Dust Properties in a Red Quasar Firstly Discovered at $z > 7$

29 **NOEMA**, *E20EO*, 5.0 hrs
A Vigorously Star-forming Red Quasar Firstly Discovered at $z > 7$

30 **NOEMA**, *E20EN*, 1.5 hrs
Confirming the Most Massive Submm Galaxy at the Node of Remarkable Galaxy Overdenstiy at z=6.57

31 **NOEMA**, *S21DM*, 34 hrs
Vigorously Turbulent Starburst Core in a Red Quasar Host at z=7.2

32 **NOEMA**, *W21EF*, 1.5 hrs
Confirming the Most Massive Submm Galaxy at the Node of Remarkable Galaxy Overdenstiy at z=6.57

33 **NOEMA**, *W21EH*, 27 hrs
A dive into the vigorously starburst core in a red quasar host at z=7.2

34 **NOEMA**, *W23DE*, 9.2 hrs
Deep [CII] 158um Line Spectroscopy for a Strongly and Multiply Lensed Galaxy at zspec = 10.17

35 **JVLA DDT**, *20A-520*, 13.2 hrs
First CO(1-0) Measurements of Strongly Lensed sub-$L^\star$ Galaxies at $z = 6$

36 **JVLA**, *21A-145*, 22 hrs
Total Gas Content in a Vigorous Star-forming Red Quasar Discovered at $z > 7$

37 **JVLA**, *21A-162*, 23.3 hrs
First CO(1-0) Measurements of Strongly&Multiply Lensed sub-$L^\star$ Galaxy at $z = 6.072$

38 **JCMT/SCUBA2**, *M17BP073*, 3 nights
Explore Submm Galaxy Nests in Protocluster at $z \sim 5 - 6$

39 **JCMT/SCUBA2**, *M18AP001*, 4 nights
Uncovering Obscured Star Formation in the Enormous Lyα Nebulae

40 **SMA**, *2020B-S051*, 3 nights
A Vigorously Star-forming Red Quasar Firstly Discovered at $z > 7$

Co-Investigator **(Highlights, in the last few years)**

1 **JWST**, *GO Cycle 2 4246*, PI: A. Abdurro'uf, 16.1 hrs
Physical Properties of a Possible Galaxy Merger at $z = 10.2$

2 **JWST**, *GO Cycle 2 4212*, PI: L. Bradley, 10.1 hrs
Unveiling the Most Distant Lensed Arc at $z \sim 10$

3 **JWST**, *GO Cycle 2 3859*, PI: M. Onoue, 10.9 hrs
Full Characterization of Starlight from a $z = 6.4$ Quasar Host Galaxy

4 **JWST**, *GO Cycle 2 3567*, PI: F. Valentino, 47.1 hrs
A deep dive into the physics of the first massive quiescent galaxies in the Universe

5 **JWST**, *GO Cycle 2 3045*, PI: A. Faisst, 59.6 hrs
Witnessing the Maturing of Teenage Galaxies at $z = 4\tilde{6}$ with a Comprehensive UV - Optical - Sub-mm Benchmark Sample for the Community

6 **JWST**, *GO Cycle 2 2883*, PI: F. Sun, 38.7 hrs
MAGNIF: Medium-band Astrophysics with the Grism of NIRCam in Frontier Fields

7 **JWST**, *GO Cycle 1 2659*, PI: J. Weaver, 13.6 hrs
Beasts in the Bubbles: Characterizing ultra-luminous Galaxies at Cosmic Dawn

8 **JWST**, *GO Cycle 1 1967*, PI: M. Onoue, 52 hrs
A Complete Census of Supermassive Black Holes and Host Galaxies at $z = 6$

9 **Keck/MOSFIRE**, *NASA S21B #20*, PI: C. Casey, 2 nights
Beasts in the Bubbles: Remarkably UV-bright Galaxies at $z = 9 - 10$

10 **Keck/MOSFIRE**, *UC S22A #U190*, PI: B. Mobascher, 2 nights
Remarkably UV-bright Galaxies at $z = 9 - 10$

11 **Keck/DEIMOS, MOSFIRE**, *UH S22A #H250*, PI: D. Sanders, 3 nights
Remarkable galaxy overdensity at $z = 6$ and $z = 8$

12 **Keck/MOSFIRE**, *NASA S22A #48*, PI: C. Casey, 2 nights
A young transition9ry $z = 7.2$ quasar formed < 1 Gyr after the Big Bang

13 **HST**, *17281*, PI: G. Leung, 5 orbits
Revealing the Nature of Five Potential Bright Galaxies at z>10

14 **ALMA**, *2021.1.00225.S*, PI: C. Casey, 36.2 hrs
Mapping Obscuration to Reionization: A blank field 2mm survey in COSMOS

15 **ALMA**, *2021.1.00018.S*, PI: R. Ivison, 30.6 hrs
Exploiting a snapshot survey of the 3,083 reddest Herschel sources to reveal distant protoclusters

16 **ALMA**, *2021.1.00181.S*, PI: F. Valentino, 19.4 hrs
Molecular gas and obscured SFR in a typical sub-$L^\star$ galaxy at z=6

17 **ALMA**, *2021.1.00211.S*, PI: R. Maiolino, 20.2 hrs
The ultimate test for quasar feedback in the early Universe: ultradeep observations of the most luminous quasar at z>6

18 **ALMA**, *2021.1.00443.S*, PI: J. Spilker, 21.2 hrs
Surveying cold quasar outflows at the highest redshifts

19 **ALMA**, *2021.1.00389.S*, PI: T. Hashimoto, 17.8 hrs
Deep [OIII] 88 um and dust continuum observations of two remarkably luminous galaxies at $z \sim 10$

20 **ALMA**, *2021.1.01320.S*, PI: J. Silverman, 26.2 hrs
Opening an Era of CGM-scale Study of the Most Massive Halos at z>6 with ALMA

21 **ALMA**, *2021.1.00075.S*, PI: Y. Ono, 8.8 hrs
CO spectroscopy for an $L^\star$ Lyman break galaxy at z=8.3118

22 **ALMA**, *2021.1.00668.S*, PI: T. Bakx, 38.3 hrs
Answers at z>6: OIII-to-CII ratio census in SFR-selected sample

23 **ALMA**, *2021.1.01262.S*, PI: T. Izumi, 18.3 hrs
High-resolution characterization of early bulge structure and feedback in a z=7.07 low-luminosity quasar

24 **ALMA**, *2021.1.01246.S*, PI: K. Kohno, 14.1 hrs
Spectroscopic identification of candidate overdensity regions of H-dropout ALMA galaxies behind two lensing clusters

25 **ALMA**, *2021.1.00407.S*, PI: F. Bauer, 8.6 hrs
Lifting the shroud on two IRAC-dark dusty star-forming galaxies

26 **ALMA**, *2021.1.00668.S*, PI: T. Bakx, 15.3 hrs
Molecular gas and outflows: OH119um absorption line at z=7.13

27 **ALMA**, *2022.1.01139.S*, PI: E. Egami, 21.5 hrs
[C II] Scan Survey of the Most UV-Luminous Galaxies at $z \sim 7$

28 **ALMA**, *2022.1.01356.S*, PI: E. Egami, 35.1 hrs
A Quest toward the Faint End of the Infrared Luminosity Function at z>4

29 **ALMA**, *2022.1.00230.S*, PI: Y. Fudamoto, 13.2 hrs
How hot are high-redshift galaxies?: constraining dust temperature at $z \sim 5$

30 **ALMA**, *2022.1.00055.S*, PI: Y. Harikane, 47.2 hrs
SERENADE: Systematic Exploration at Reionization Epoch Nebula And Dust Emission

31 **ALMA**, *2022.1.00257.S*, PI: T. Hashimoto, 16.9 hrs
Deep [O III] 88 μm and dust continuum observations of two remarkably luminous galaxies at $z \sim 10$

32 **NOEMA**, *W20EQ*, PI: F. Valentino, 25 hrs
The redshift confirmation of a bright z=9.8 galaxy

33 **NOEMA**, *S21DN*, PI: F. Valentino, 27 hrs
The redshift confirmation of a bright z=9.8 galaxy

Large Projects Involved

1 **ALMA Large Project**, *2017.1.00428.L*, PI: O. Le Fèvre, 69 hrs
The ALMA Large Program to Investigate CII at Early times (ALPINE)

2 **ALMA Large Project**, *2018.1.00035.L*, PI: K. Kohno, 98 hrs
ALMA Lensing Cluster Survey (ALCS)

3 **ALMA Large Project**, *2023.1.00180.L*, PI: A. Faisst, 148 hrs
The COSMOS High-z ALMA-MIRI Population Survey (CHAMPS): A Wide-Area Comprehensive Survey of the Dusty Universe

4 **JWST ERS Project**, *Cycle 1 1354*, PI: S. Finkelstein, 65 hrs
The Cosmic Evolution Early Release Science Survey (CEERS)

5 **JWST Treasury Project**, *GO Cycle 1 2079*, PI: S. Finkelstein, 122 hrs
The Webb Deep Extragalactic Exploratory Public Survey: Feedback in Low-Mass Galaxies from Cosmic Dawn to Dusk (NGDEEP)

6 **JWST Treasury Project**, *GO Cycle 1 1727*, PIs: J. Kartaltepe & C. Casey, 218 hrs
The JWST Cosmic Origins Survey (COSMOS-Web)

7 **JWST Treasury Project**, *GO Cycle 1 2561*, PIs I. Labbe & R. Bezanson, 83.3 hrs
Ultra-deep NIRCam and NIRSpec Observations Before the Epoch of Reionization (UNCOVER)

8 **JWST Large Project**, *GO Cycle 2 3293*, PIs H. Atek & J. Chisholm, 147.8 hrs
JWST's GLIMPSE: Gravitational lensing & NIRCam imaging to probe early galaxy formation and sources of reionization (GLIMPSE)

Supervising & Teaching

2023–present **Co-supervisor of Clara Giménez-Arteaga (PhD student at DAWN)**, *a paper submitted*

2021–2022 **Primary supervisor of Hollis Akins (Bachelor student at Grinnell College)**, *a paper published in ApJ*

2021–2022 **Co-supervisor of Vasily Kokorev (PhD student at DAWN)**, *a paper published in ApJ*

2021–2022 **Co-supervisor of Meghana Killi (PhD student at DAWN)**, *a paper published in MNRAS*

2016–2018 **Lecture talk in "Science Lab"**, *Hikawa High School, Japan*

2016–2017 **Teaching assistance for 5–6 bachelor students**, *for a week-long intensive course to make them obtain practical research experience*

Professional Service

2023 **ALMA Science Assessors (Proposal review for large programs)**

2020 **Committee member of DAWN PhD student selection**

2020 **Committee member of DAWN-IRES Scholars program Selection**

2019–present **Referee for telescope proposal of JWST, HST, Subaru, JCMT, ALMA, Gemini, VLT**

2017–present **Referee for journal papers of ApJ, ApJL, MNRAS, A&A**

Outreach Experience

2023 **Press Release, "Set of Extremely Distant Galaxies (NIRSpec MSA Emission Spectra)"**, *NASA, ESA, CSA*

2022 **Press Release, "Hubble Sheds Light on Origins of Supermassive Black Holes"**, *ESA/Hubble, NASA, INAF, DAWN, NAOJ*

2021 **Press Release, "ALMA Discovers Rotating Infant Galaxy with Help of Natural Cosmic Telescope"**, *NAOJ, U. Tokyo, ICRR, DAWN*

2019 **Press Release, "Carbon Cocoon Surrounded Growing Galaxies – ALMA Spots Earlies Environment Pollution in the Universe –"**, *NAOJ, U. Tokyo, ICRR, U. Osaka, SNS, DAWN, NBI*

2016 **Press Release, "ALMA Resolves the Cosmic Infrared Background Light"**, *NAOJ, U.Tokyo, ICRR*

2023 **Public talk in Board of Visitors Meeting, "Exploring visible and obscured sides of the early Universe"**, *UT Austin, USA*

2019 **Public talk: "The Sense of Wonder"**, *All Nippon Airways, Japan*

2017 **Web Article "Beyond Connecting Dots"**, *School of Science News in U.Tokyo*

2012–2014 **Monthly star gazing event management staff**, *NAOJ*

International Conferences (Highlights)

Summary **Invited (13), Peer-reviewed oral talks (>20), other oral talks (>30)**

2024 (invite) **Cosmic Origins: the first billion years**, *Santa Barbara*, USA

2024 (invite) **Gas, Dust, and Star-Formation in Galaxies from the Local to Far Universe**, *Crete*, Greece

2024 (invite) **The chronology of the very early Universe according to JWST: the first billion years**, *Bern*, Switzerland

2024 (invite) **The growth of galaxies in the Early Universe - IX**, *Sesto*, Italy

2024 (invite) **I2I: Back Again to Linking Galaxy Physics From ISM to IGM Scales**, *Sesto*, Italy

2023 (invite) **Star formation within evolving galaxies: The revolution of upcoming space missions**, *Bern*, Switzerland

2022 (invite) **In Situ View of Galaxy Formation 2**, *Ringberg*, Germany

2022 (invite) **I2I: Linking galaxy physics from ISM to IGM scales**, *Sesto*, Italy

2022 (invite) **The growth of galaxies in the Early Universe - VII**, *Sesto*, Italy

2019 (invite) **Ringberg Workshop**, *Ringberg*, Germany

2019 (invite) **Revolutionary Spectroscopy of Today as Springboard to Webb**, *Leiden*, Netherlands

2019 (invite) **DAWN Summit**, *Copenhagen*, Denmark

2018 (invite) **Chili-Japan Academic Forum**, *Nikko*, Japan

2023 **Resolving the Extragalactic Universe with ALMA & JWST**, *Tokyo*, Japan

2023 **JWST First Light Conference**, *Boston*, USA

2022 **COSPAR 2022 – Super Massive Black Holes at High Redshift**, *Athens*, Greece

2022 **COSMOS Meeting 2022**, *Paris*, France

2019 **ALMA 2019: Science Results and Cross-Facility Synergies**, *Cagliari*, Italy

2019 **Views on the ISM in galaxies in the ALMA era**, *Bologna*, Italy

2019 **Extremely Big Eyes on the Early Universe**, *Roma*, Italy

2017 **Twenty years of Submillimeter Galaxies**, *Durham*, England

2016 **The 6th Subaru International Conference**, *Hiroshima*, Japan

Colloquia & Seminar talks (Highlights)

2023 **IPMU Lunch Seminar**, *Chiba*, Japan

2023 **NAOJ Colloquium**, *Tokyo*, Japan

2023 **University of Tokyo, Colloquium**, *Tokyo*, Japan

2022 **INAF Bologna lunch seminar**, *Bologna*, Italy

2022 **FORTH/IA Seminar**, *Crete*, Greece

2021 **Galaxy Evolution Seminar**, *Cambridge*, UK

2021 **Exgal-Cosmology series**, *UT Austin*, United States

2021 **Special Seminar**, *UCLA*, United States

2020 **Lunch Seminar**, *ESO*, Germany

2019 **Special Visitor Seminar**, *MPIA*, Germany

2019 **Wednesday Colloquium**, *Caltech*, United States

2018 **Galaxy Seminar**, *STScI*, United States

2018 **Special Visitor Seminar**, *SNS*, Italy
2018 **Special Visitor Seminar**, *LAM*, France
2017 **Lunch Seminar**, *EAO*, United States
2016 **Special Visitor Seminar**, *University of Stockholm*, Sweden
2016 **Lunch Seminar**, *Geneva Observatory*, Switzerland