CURRICULUM VITAE

Andreas Faisst | Caltech - Infrared Processing and Analysis Center | afaisst@caltech.edu

PERSONAL INFORMATION

Name Andreas Faisst
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RESEARCH INTERESTS

- Physics during the Epoch of Reionization
- Early phases of galaxy formation and evolution
- Physical and structural properties of highredshift galaxies
- Quenching of star formation in massive galaxies

MAIN LEADS AND INVOLVEMENTS

U.S. lead principal investigator of ALPINE (a 70-hour large ALMA program). Member of the IPAC Joint Pixel Processing and Tech Initiative. Science co-investigator and science operation center (SOC) scientist for ISCEA (a NASA small satellite mission). Part of the science and outreach team for CASTOR (a Canadaled space telescope).

REFERENCES

Dr. Peter Capak (Caltech/IPAC), capak@ipac.caltech.edu. More references are available upon request.

CAREER AND EDUCATION

Jan 2019 to present Assistant Research Scientist at Caltech/IPAC Oct 2016 to Dec 2018 Postdoctoral Researcher at Caltech/IPAC

May 2015 to Oct 2016 SNSF Postdoctoral Fellow at Caltech (Visitor in Astronomy)

April 2015 Dr. Sc. ETH Zurich in Physics

ETH Zurich, Switzerland

Thesis: "The Evolution of Star-forming and Quiescent Massive Galaxies through

Cosmic Time"

March 2011 M.Sc. in Physics

ETH Zurich, Switzerland

Thesis: "Star-forming Galaxies at Redshifts z~2 and z~4"

September 2009 B.Sc. in Physics

ETH Zurich, Switzerland

GRANTS, HONORS, AND AWARDS

April 2014SNSF Early Postdoc Mobility FellowshipMarch 2012ETH Medal for outstanding Master thesisMarch 2011M.Sc. in Physics Cum Laude at ETH Zurich

PROFESSIONAL SKILLS

 Analysis of imaging & spectroscopic data in optical, infrared, and sub-millimeter

Analytical models/predictions for large data sets

• (Big) Data processing and visualization

• Database management (Hadoop, SQL, SQLite)

• Machine Learning techniques

Public outreach, science writing, and science communication/education

• CG art, video, graphics and webpage design

OTHER SKILLS

Languages German (native), English (fluent),

French (good), Italian (basics)

Programming R, Python, Matlab, IDL, C++, Perl

Web-based PHP, HTML, JavaScript, CSS Webpages http://splash.caltech.edu

(references) http://www.astro.caltech.edu/~afaisst

http://www.gerbermedia.ch http://www.raineroberhaensli.ch http://www.sternwarte-uitikon.ch

Others I am co-founder of the IPAC

Visualization group (IViz), a thinktank for advanced data visualization in

science, for public and outreach.

OBSERVING EXPERIENCE AND SELECTED PROPOSALS

I have contributed to or lead several observations in the past:

- Keck I, Hawaii, 2012 2018: 22.5 nights on MOSFIRE (NIR spectrograph)
- Keck II, Hawaii, 2011 2016: 8 nights on DEIMOS (optical spectrograph)

I led the following selection of accepted proposals as Principal-Investigator (PI):

2019, ALMA, Cycle 7 Unraveling the complex ISM of z=4.5 galaxies: With the largest sample of

[NII]205+[CII]158 detected galaxies

(28.4 hours, Proposal ID #2019.1.00535.S, **PI: Faisst**)

2019, HST, Cycle 26M HST imaging for an immediate study of the ISM in z=4.5 galaxies

(6 orbits, WFC3/IR, Proposal ID #15692, PI: Faisst)

2018, ALMA, Cycle 6 Are high-redshift Galaxies hot? Constraining the temperatures of z~5.5 galaxies

(resubmission, 11.1 hours, Proposal ID #2018.1.00348.S, PI: Faisst)

2018, Keck 2018B [OIII] Emitters in the Epoch of Reionization: Clues to Early Galaxy Formation

(1.5 nights, MOSFIRE, Proposal ID #20/2018B_N144, **PI: Faisst**)

2017, ALMA, Cycle 5 ALPINE: The ALMA Large Program to INvestigate C+ at Early times

(69.3 hours, Proposal ID #2017.1.00428.L, North America PI: Faisst)

2017, ALMA, Cycle 5 Are high-redshift Galaxies hot? Constraining the temperatures of z~5.5 galaxies

(11.1 hours, Proposal ID #2017.1.00479.S, **PI: Faisst**)

I contributed significantly to the following selection of accepted proposals as Co-Investigator (CoI):

2019, Keck, 2020A Direct spectroscopic confirmation of z>~4 quiescent galaxies

(1 night, MOSFIRE, Proposal ID # S20A0037N, PI: Tanaka)

2019, Keck, 2020A Understanding Reionizing Source with Newly-Identified IRAC Excess Galaxy

(1 night, MOSFIRE, Proposal ID # S20A0085N, PI: Harikane)

2019, Keck, 2020A MOSFIRE Observations of ALMA Dust Continuum Sources (Caltech) and Black Hole

Growth (Yale)

(4 nights, MOSFIRE, Proposal ID #XXX, PI: Scoville)

2019, ALMA, Cycle 7 A kpc-scale view to the dust and gas content of typical star forming ALPINE galaxies

at z~4.6

(30 hours, Proposal ID #2019.1.00226.S, PI: Ibar)

2019, ALMA, Cycle 7 Into the Heart of Darkness: Imaging a "Maximum Starburst" Nucleus at 75pc

Resolution in the First Billion Years

(5 hours, Proposal ID #2019.1.00212.S, PI: Riechers)

2019, ALMA, Cycle 7 Evolution of ISM Masses in the First 2 Gyr at z = 3 - 6

(5.6 hours, Proposal ID # 2019.1.00459.S, PI: Scoville)

2010 UCT Cycle 27	Ha II Emission from Wolf Dayet Stars, a New Dust Attenuation
2019, HST Cycle 27	He II Emission from Wolf-Rayet Stars: a New Dust Attenuation Measure in Star-forming Galaxies
	(14 orbits, STIS, Proposal ID #15846, PI: Leitherer)
2019, HST Cycle 27	Understanding an Extreme QSO: The Curious Case of SDSS 0956+5128
	(3 orbits, ACS/WFC, Proposal ID # 15872, PI: Steinhardt)
2019, Keck, 2019B	Understanding Reionizing Source with Newly-Identified IRAC Excess Galaxy III (2 nights, MOSFIRE, Proposal ID # S19B0003N, PI: Harikane)
2018, Keck, 2019A	Understanding Reionizing Source with Newly-Identified IRAC Excess Galaxy II (2 nights MOSFIRE, Proposal ID #S19A0037N, PI: Harikane)
2018, ALMA, Cycle 6	Into the Heart of Darkness: Imaging a "Maximum Starburst" Nucleus at ~95pc Resolution in the First Billion Years (4 hours, Proposal ID# 2018.1.00222.S, PI: Riechers)
2018, Magellan	Follow up of [OII] emission in ALPINE galaxies
2010) Magenan	(2 nights, Magellan/FIRE, PI: Mendez)
2017, Subaru 2018A	Hawaii Two-0: Subaru Hyper Suprime-Cam (HSC) imaging and Keck
	LRIS+MOSFIRE spectroscopy on 20deg ²
	(30 hours HSC, 5 nights LRIS, 5 nights MOSFIRE, PI: Sanders)
2018, Keck 2018B	MOSFIRE Observations of ALMA Dust Continuum Source and Black Hole Growth (3 nights, MOSFIRE, Proposal ID #2018B_C236, PI: Scoville)
2017, HST Cycle 25	Beyond Ultra-deep Frontier Fields and Legacy Observations (BUFFALO) (101 orbits, Proposal ID #15117, PI: Steinhardt)
2017, Keck 2017B	Direct Spectroscopic Confirmation of z>4 Quiescent Galaxies
2017, Reck 2017D	(1 night, MOSFIRE, Proposal ID #S17B-106, PI: Tanaka)
2016, SST Cycle 13	The Euclid/WFIRST Spitzer Legacy Survey
,	(5286 hours, Spitzer/IRAC, Proposal ID #13058, PI: Capak)
2016, HST Cycle 24	The Fundamental Plane of Ultra-Massive Galaxies at $z \sim 2$ (11 orbits, Proposal ID #14721, PI: Conselice)
2015, Keck 2016A	DEIMOS Spectroscopy of Ultra-Diffuse Galaxies in the Coma Cluster (4 nights, DEIMOS, Proposal ID #2016A_C270D, PI: Koda)
2013, SST Cycle 10	SPLASH: Spitzer Large Area Survey with Hyper Suprime-Cam (1650 hours, Spitzer/IRAC Proposal ID #10042, PI: Capak)
2011, HST Cycle 19	Constraints on the Mass Assembly and Early Evolution of $z \sim 2$ Galaxies: Witnessing
, - , -, -	the Growth of Bulges and Disks
	(55 orbits, Proposal ID #12578, PI: Förster-Schreiber)

TEACHING EXPERIENCE AND STUDENT SUPERVISION

Amongst co-mentoring many other students:

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Fall 2019	Summer graduate student Thomas Venville (Swinburne University) Topic: Identifying transient and variable sources with machine learning
Summer 2019	FIELDS student: Ishita Korde (University California Riverside) Topic: Spectroscopic measurements for COSMOS galaxies
Spring 2018	Graduate summer project: Rebecca Larson (U. Texas) Topic: Redshifts Derivation from Galaxy Clustering
Spring 2016	Under-graduate thesis project: Catalina Miritescu (Caltech) Topic: The Escape Fraction of UV Photons in Strong Line Galaxies
2015 - 2017	Under-graduate thesis project: Ivana Barisic (Caltech) Topic: Dust Properties of $z \sim 6$ Galaxies with ALMA and HST (Now graduate student at MPIA Heidelberg)
Spring 2015	Astrophysics II (Prof. M. Carollo), ETH Zurich

Fall 2014 Physics I (Prof. S. Lilly), ETH Zurich

Spring 2014Astrophysics II (Prof. M. Carollo), ETH ZurichSpring 2013Astrophysics II (Prof. M. Carollo), ETH Zurich

Fall 2012 Physics I (Prof. M. Carollo), ETH Zurich

Fall 2012 & 2013 Astronomy Week (advanced bachelor lab), ETH Zurich

Spring 2011 Semester project: S. Tacchella (ETH Zurich)

Topic: SED fitting constraints from IRAC near-IR observations

(Now postdoc at Harvard)

(INVITED) SEMINARS AND COLLOQUIA

February 2019 Tea talk at the DAWN center (Copenhagen, Denmark)

Invited Talk: Galaxies in the Early Universe: In the view of newest observations

with Spitzer, ALMA, and HST

February 2019 Rochester Institute of Technology (Rochester NY, USA)

Invited Talk: *Galaxies in the Early Universe: The view from the newest*

observations with Spitzer, ALMA, and HST

December 2018 Harvard-Smithsonian Center for Astrophysics (Cambridge, MA, USA)

Invited Talk: Galaxies in the Early Universe: The view from the newest

observations with Spitzer, ALMA, and HST

September 2018 Saint Mary's University: astronomy colloquium (Halifax, NS, Canada)

Invited Talk: Galaxies in the Early Universe: The view from the newest

observations with Spitzer, ALMA, and HST

November 2017 University of British Columbia: astronomy colloquium (Vancouver, BC, Canada)

Talk: Galaxies in the Early Universe: The view from the newest observations with

Spitzer, ALMA, and HST

November 2017 UC Berkeley: Astro lunch talk (Berkeley, CA, USA)

Talk: Galaxies in the Early Universe: The view from the newest observations with

Spitzer, ALMA, and HST

October 2017 Institute for Astronomy Hawaii: astronomy colloquium (Honolulu, HI, USA)

Talk: Galaxies in the Early Universe: The view from the newest observations with

Spitzer, ALMA, and HST

October 2017 UC Santa Barbara: astronomy lunch talk (Santa Barbara, CA, USA)

Talk: Galaxies in the early Universe: In the view of the newest observations with

Spitzer, ALMA, and HST

October 2017 Cornell University: Galaxy lunch seminar (Ithaca, NY, USA)

Talk: Galaxies in the early Universe: In the view of the newest observations with

Spitzer, ALMA, and HST

October 2017 UC Riverside: Lunch seminar (Riverside, CA, USA)

Talk: Galaxies in the early Universe: In the view of the newest observations with

Spitzer, ALMA, and HST

September 2017 UCLA: Lunch journal club (Los Angeles, CA, USA)

Talk: Galaxies in the early Universe: In the view of the newest observations with

Spitzer, ALMA, and HST

September 2017 Carnegie Observatories: Lunch talk (Pasadena, CA, USA)

Talk: Galaxies in the early Universe: In the view of the newest observations with

Spitzer, ALMA, and HST

February 2017 Caltech/IPAC lunch talk (Pasadena, CA, USA)

Talk: *Insights into the high-redshift Universe using Spitzer and Local Galaxies*

August 2016 ETH Zurich: Lunch seminar talk (Zurich, Switzerland)

Invited Talk: Insights into the High-Redshift Universe using Spitzer and Local

Galaxies

June 2016 Telescope Science Institute and Johns Hopkins University: lunch seminar

(Baltimore, MD, USA)

Talk: Insights into the High-Redshift Universe using Spitzer and Local Galaxies

May 2016 UC Davis: Cosmology seminar (Davis, CA, USA)

Invited Talk: Insights into the High-Redshift Universe from Spitzer and Local

Galaxies

May 2016 Pasadena postdoc retreat (Lake Arrowhead, CA, USA)

Talk: *Emission line Properties of high-z Galaxies*

October 2016 University of Minnesota: Astrophysics colloquium (Minneapolis, MN, USA)

Invited Talk: Insights into the High-Redshift Universe using Spitzer and Local

Galaxies

September 2016 Laboratoire d'Astrophysique de Marseille Marseille: Astronomy seminar

(Marseille, France)

Invited Talk: *Insights into the High-Redshift Universe using Spitzer and Local*

Galaxies

September 2016 Geneva Observatory: Astronomy seminar (Geneva, Switzerland)

Talk: Insights into the High-Redshift Universe using Spitzer and Local Galaxies

CONFERENCE TALKS

November 2019 Keck Science Meeting 2019 at UCLA (Los Angeles, USA)

Talk: 10,000 Keck spectra to study galaxy evolution across 7 billion years of cosmic

time

August 2019 From AGN to Starburst: A Multi-wavelength Synergy (Guiyang, China)

Talk: Insights into the ISM conditions of infant galaxies

July 2019 The 2019 Greater IPAC Science Symposium (Pasadena, CA, USA)

Talk: Insights into the ISM of infant galaxies with Spitzer and ALMA

November 2018 IAU Symposium 341: PanModel2018 – Challenges in Panchromatic Galaxy

Modeling with Next Generation Facilities (Osaka, Japan)

Talk: ALPINE: The large ALMA Program to Study the Interstellar Medium of High

Redshift Galaxies

June 2018 The 2018 Greater IPAC Science Symposium (Pasadena, CA, USA)

Talk: Go ALPINE! Interstellar medium properties of high redshift galaxies

April 2018 Simulated Skies for new-generation Spectroscopic Surveys (Madrid, Spain)

Talk: Empirical Modeling of the Redshift Evolution of the [NII]/Ha ratio for Galaxy

Redshift Surveys and Simulations

May 2017 Hyper Suprime-Cam Collaboration Meeting (Sendai, Japan)

Talk: Studying optical Emission Lines in z > 4 Galaxies with SPLASH

May 2017 The 2017 Greater IPAC Science Symposium (Pasadena, CA, USA)

Talk: Galaxies at z = 6: Hot and Turbulent

September 2016 Mapping the Pathways of Galaxy Transformation Across Time and Space (Avalon

- Catalina Island, CA, USA)

Talk: *How to quench massive galaxies*

March 2016 The 2016 Greater IPAC Science Symposium (Pasadena, CA, USA)

Talk: Emission Lines in High Redshift Galaxies as Probed by Spitzer

March 2016 Aspen Winter Conference – The Reionization Epoch: New Insights and Future

Prospects (Aspen, CO, USA)

Talk: Emission Lines from Broad Bands: sSFR and [OIII]/H β ratio at 3 < z < 6

January 2016 227th Meeting of the American Astronomical Society (Kissimmee, FL, USA)

Talk: Rest-UV absorption lines as Metallicity Estimator: The Metal Content of Star-

forming Galaxies at $z \sim 5$

August 2014 Lyman Continuum Leakage and Cosmic Reionization (Stockholm, Sweden)

Talk: Constraints on re-ionization at $z \sim 8$ using $Ly\alpha$ emitters

COLLABORATIVE MEETINGS AND WORKSHOPS

October 2019 Lorentz Workshop (Invited): Revolutionary Spectroscopy of Today as a

Springboard to the James Webb Space Telescope (Leiden, Netherlands)

May 2019 ALPINE Team Meeting (Bologna, Italy, co-organizer)

Lead ancillary data group

May 2019 COSMOS Team Meeting (New York, USA)

Talk 1: Update on ALPINE

Talk 2: Insights into the ISM of Early Galaxies
RUFFALO Team Moeting (Marsoille France)

October 2018 BUFFALO Team Meeting (Marseille, France)

Talk: Study Galaxy Growth in the Early Universe with Spitzer and ALMA

October 2018 ALPINE Team Meeting (Marseille, France)

June 2018 COSMOS Team Meeting (Copenhagen, Denmark)

Talk: Go ALPINE! Interstellar Medium Properties of High Redshift Galaxies

July 2017 COSMOS Team Meeting (Kyoto, Japan)

Talk: $Galaxies\ at\ z=6$: Hot and turbulent?

June 2016 COSMOS Team Meeting (Baltimore, MD, USA)

Talk: Studying the First Galaxies with Spitzer and the Help of Locals

June 2015 COSMOS Team Meeting (Helsinki, Finland)

Talk: Quenching of Massive Galaxies

May 2015 COSMOS Team Meeting (Zagreb, Croatia)

Talk: Structure of high mass galaxies at $z \sim 2$ in UltraVISTA

May 2013 COSMOS Team Meeting (Kyoto, Japan)

Talk: *Spectroscopic follow-up of z* ~ 7.7 *Ly\alpha emitters in COSMOS*

June 2011 COSMOS Team Meeting (Zurich, Switzerland)

Talk: The galaxy population in $z \sim 2$ proto-groups

May 2011 zCOSMOS Team Meeting (Zurich, Switzerland)

Talk: *Update on zCOSMOS-deep sample*

CONFERENCE POSTERS

September 2018 Keck Science Meeting (Pasadena, CA, USA)

Poster: Keck + ALMA = ALPINE; A Synergy to Pioneer the Study of the First Galaxies

November 2017 The Origin of Galaxies, Stars and Planets in the Era of ALMA (Pasadena, CA, USA)

Poster 1: Dust in the Early Universe – A study of dust properties of $z \sim 6$ Galaxies Poster 2: ALPINE: A 70h ALMA program to Study Galaxy Growth at 4 < z < 6

March 2016 WFIRST Science Conference (Pasadena, CA, USA)

Poster: Emission Line Properties of z > 3 Galaxies: Synergy of Spitzer and WFIRST

PROFESSIONAL ACTIVITIES AND SERVICES

January 2020 Organizer of the Machine Learning workshop at the AAS #235 in Honolulu,

Hawaii

August 2019 to

present

Member of the IPAC Visiting Graduate Student Fellowship committee

September 2018 to

2019

Member of the Caltech Astronomy Colloquium committee

December 2017 to

present

Science advisor and consultant for *The Science and Entertainment Exchange*: A program of the National Academy of Science that connects entertainment

industry professionals with top scientists and engineers to create a synergy between accurate science and engaging storylines in both film and TV

programming.

December 2017 to

present

Reviewer for the NASA Earth and Space Science Fellowship (NESSF) and the Future

Investigators in NASA Earth and Space Science and Technology (FINESST)

programs. These fellowships are \$45k awards to supplement graduate student's

stipend for a period of up to three years.

December 2017 LOC member of the JWST Proposal Planning Workshop

Pasadena, CA, USA

August 2017 to Co-founder and organizer of the IPAC Visualization group (IViz), a think-tank for

advanced data visualization in science, for public and scientific outreach.

November 2016 to

present

present

Co-organizer of weekly Astro-ph journal club at Caltech

November 2016 to Lead of Pasadena Astro Postdoc Mixer at Caltech/IPAC

present Pasadena, CA, USA

Acquisition of funding and organization. Science meeting for all postdoctoral researchers in astronomy related fields in Pasadena (including Caltech Astronomy,

Carnegie, IPL).

October 2015 to Telescope observing proposal referee for the Canadian Time Allocation

present Committee (CanTAC)

October 2015 to Reviewer for "The Monthly Notices of the Royal Astronomical Society" (MNRAS)

present and "The Astrophysical Journal" (ApJ)

OUTREACH AND SCIENCE COMMUNICATION ACTIVITIES

These are my main outreach events that I have participated in or led, amongst other smaller ones not listed here.

2016 – present Contributions to Astronomy on Tap Los Angeles (Pasadena, CA, USA)

Talk (September 2016): All started with a Big Bang

2016 – present Contributions to Lecture Series & Stargazing at Caltech (Pasadena, CA, USA)

Talk (September 2017): Where to find real Time Machines and how to use them

2016 – present Member of the Los Angeles Astronomical Society (LAAS)

September 2019 Organizer of Caltech/Astro outreach event for SSGA/Merill at Caltech (Pasadena,

CA, USA).

May 2019 Speaker at Astronomy on Tap New York City (Manhattan, NY, USA)

October 2018 Hosting of the movie "Into the Unknown" about the James Webb Space Telescope

and talk "How to Study the First Galaxies with JWST" (City of Commerce, CA, USA)

June 2018 Organization of first Astronomy On Tap in Copenhagen, Denmark

Talk: The Big Bang and the Birth of Galaxies

June 2018 Public talk at the Griffith Observatory for the Friends of the Observatory (FOTO)

(Los Angeles, CA, USA)

Talk: The Life of Galaxies: From turbulent Birth to (a silent) Death

January 2018 Science Night at the Arroyo Vista Elementary School: Infrared camera

demonstration (South Pasadena, CA, USA)

November 2017 "Exploring your Universe" event at UCLA (Los Angeles, CA, USA)

Lead of Caltech/IPAC booth (infrared camera and TRAPPIST-1 VR headset)

October 2016 Pasadena Astronomy Week: Stargazing, Booth of the Infrared Processing and

Analysis Center (Pasadena, CA, USA)

July 2016 Public talk at the Griffith Observatory for the Los Angeles Astronomical Society

(Los Angeles, CA, USA)

Talk: The Life of Galaxies: From turbulent Birth to (a silent) Death

June 2016 Speaker at Astronomy on Tap Baltimore (Baltimore, MD, USA)

Talk: The Big Bang and the Birth of Galaxies

March 2016 Greenway Talk Series at the Palomar Observatory (Palomar Mountain, CA, USA)

Talk: The High Redshift Universe: How we find and characterize the First Galaxies

in our Universe

2013 – 2015 Board member of AMP (Association of non-faculty scientific staff of the physics

department) at ETH Zurich (Zurich, Switzerland)

2009 - 2015	Guide at the Urania Observatory (Zurich, Switzerland)
2009 - 2015	Board member of the Zurich Astronomy Association (AGUZ) and member of the
	Swiss Astronomical Association (SAG). Specialized in outreach and event
	management and organization.
2005 – 2015	Guide at the Uitikon/Waldegg Observatory (Zurich, Switzerland)