

## Sedona Price

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### Research Interests

Galaxy evolution, high redshift galaxies, galaxy structure, gas and stellar kinematics

### Education

2017 **Ph.D. Astrophysics**, *University of California, Berkeley*  
*Dissertation:* Galaxies in the Young Universe: Structures, Masses, and Composition  
of Star-Forming Galaxies at  $z \sim 1.5 - 3$   
*Advisor:* Mariska Kriek

2013 **M.A. Astrophysics**, *University of California, Berkeley*

2011 **B.S. Physics**, *with honors, California Institute of Technology*

### Research Positions

2017-present Postdoctoral Scholar, Max-Planck-Institut für extraterrestrische Physik, Garching, Germany

2011-2017 Graduate Student, UC Berkeley, CA, USA

2008-2010 Summer Undergraduate Research Fellow; undergrad. researcher, Caltech, Pasadena, CA, USA

### Fellowships & Awards

2014 Outstanding Graduate Student Instructor Award, UC Berkeley

2012 NSF Graduate Research Fellowship, UC Berkeley

2009 Margie Lauritsen Leighton Prize, Caltech

### Observing Experience

European Southern Observatory, VLT, SINFONI (3 nights)

W. M. Keck Observatory, Keck I 10 m telescope, MOSFIRE (10.5 nights), OSIRIS (3.5 nights), LRIS (0.5 night)

### Teaching

2013 Astro C10, *Co-head GSI, Introductory course for non-majors*, UC Berkeley

2012 Astro 7b, *GSI, Introductory course for majors*, UC Berkeley

2011 Astro C10, *GSI, Introductory course for non-majors*, UC Berkeley

2010, 2011 Physics 6, *TA, Sophomore physics major lab*, Caltech

### Service

— Referee, *The Astrophysical Journal (ApJ)*

2013-2016 Mentoring coordinator, *co-head of grad student mentoring program*, UC Berkeley

2014-2015 Co-supervisor, *undergraduate student Meng Luo*, UC Berkeley

2013-2015 Mentor, *mentoring junior graduate student*, UC Berkeley

2012-2015 Graduate Student Representative, *Astronomy Department*, UC Berkeley

### Outreach

2017 April Solar Activities, *Marin Elementary STEAM day*, UC Berkeley

2012-2017 Annual Cal Day, *Astronomy Department exposition*, UC Berkeley

2014-2017 Mentoring Group, *Society of Women in Physical Sciences*, UC Berkeley

2016 May Solar Viewing, *Ecology Center Festival*, UC Berkeley

2011-2015 Annual Bay Area Science Festival, *Science@Cal*, UC Berkeley

2013-2015 Annual Astronomy Demo Day, *Meher School 5th grade class*, UC Berkeley

2012-2014 Mentor, *Berkeley Compass Project*, UC Berkeley

2012 Mar Expanding Your Horizons workshop, *for middle school girls*, UC Berkeley

## Presentations

### Conferences:

2020 Mar	Invited Talk, IAU Symposium 359, <i>GALFEED</i> , Bento Gonçalves, RS, Brazil
2019 Oct	Invited participant, Lorentz Center, <i>Revolutionary Spectroscopy of Today as a Springboard to Webb</i> , Leiden, the Netherlands
2019 Sep	Invited Talk, KIAA, <i>Second Forum on Gas in Galaxies</i> , Beijing, China
2019 Mar	Invited Talk, Universität Heidelberg, <i>MOSAIC 2019 Science meeting</i> , Heidelberg, Germany
2018 Dec	Talk, ESO Workshop, <i>KMOS@5</i> , Garching, Germany
2018 Aug	Talk, Santa Cruz Galaxy Workshop, Santa Cruz, CA, USA
2017 Jun	Talk, Conf, <i>Advances in Galaxy Evolution</i> , Ringberg, Germany
2016 Sep	Talk, Keck Science Meeting, Pasadena, CA, USA
2016 Aug	Talk, Santa Cruz Galaxy Workshop, Santa Cruz, CA, USA
2016 Jul	Talk, Munich Joint Conference, <i>Discs in Galaxies</i> , Garching, Germany
2016 Apr	Poster, STScI Spring Symposium, <i>What Shapes Galaxies?</i> , Baltimore, MD, USA
2015 Aug	Talk, IAU Symposium 319, <i>Galaxies at High Redshift and Their Evolution over Cosmic Time</i> , Honolulu, HI, USA
2013 May	Talk, Lorentz Center, <i>Galaxy formation from <math>z=5</math> to <math>z=0</math></i> , Leiden, the Netherlands

### Seminars:

2017 Jun	Invited Cosmology seminar, UC Davis, CA, USA
2016 Nov	Tea talk, Caltech, Pasadena, CA, USA
2016 Nov	Lunch seminar, Carnegie Observatories, Pasadena, CA, USA
2016 Nov	Invited seminar, CfA/Harvard, Cambridge, MA, USA
2016 Nov	Invited lunch talk, MIT, Cambridge, MA, USA
2015 Nov	Lunch talk, UC Berkeley, CA, USA
2013 Oct	Lunch talk, UC Berkeley, CA, USA

## First Author Publications

1. **Price, S. H.**, Shimizu, T. T., Genzel, R., et al., “*Rotation Curves in  $z \sim 1$ -2 Star-Forming Disks: Comparison of Dark Matter Fractions and Disk Properties for Different Fitting Methods*,” 2021, [arXiv:2109.02659](#)
2. **Price, S. H.**, Kriek, M., Barro, G., et al., “*The MOSDEF Survey: Kinematic and Structural Evolution of Star-forming Galaxies at  $1.4 \leq z \leq 3.8$* ,” 2020, [ApJ, 894, 91](#)
3. **Price, S. H.**, Kriek, M., Feldmann, R., et al., “*Testing the Recovery of Intrinsic Galaxy Sizes and Masses of  $z \sim 2$  Massive Galaxies Using Cosmological Simulations*,” 2017, [ApJL, 844, L6](#)
4. **Price, S. H.**, Kriek, M., Shapley, A. E., et al., “*The MOSDEF Survey: Dynamical and Baryonic Masses and Kinematic Structures of Star-Forming Galaxies at  $1.4 \leq z \leq 2.6$* ,” 2016, [ApJ, 819, 80](#)
5. **Price, S. H.**, Kriek, M., Brammer, G. B., et al., “*Direct Measurements of Dust Attenuation in  $z \sim 1.5$  Star-Forming Galaxies from 3D-HST: Implications for Dust Geometry and Star Formation Rates*,” 2014, [ApJ, 788, 86](#)

## Contributing Author Publications

1. Topping, M. W., Shapley, A. E., Sanders, R. L., et al., including **SHP**, “*The MOSDEF survey: the mass-metallicity relationship and the existence of the FMR at  $z \sim 1.5$* ,” 2021, [MNRAS, 506, 1237](#)
2. Reddy, N. A., Topping, M. W., Shapley, A. E., et al., including **SHP**, “*The Effects of Stellar Population and Gas Covering Fraction on the Emergent Lyman Alpha Emission of High-Redshift Galaxies*,” 2021, [arXiv:2108.05363](#)
3. Suess, K. A., Kriek, M., **Price, S. H.**, & Barro, G., “*Dissecting the size-mass and  $\Sigma I$ -mass relations at  $1.0 < z < 2.5$ : Galaxy Mass Profiles and Color Gradients as a Function of Spectral Shape*,” 2021, [ApJ, 915, 87](#)
4. Sanders, R. L., Shapley, A. E., Jones, T., et al., including **SHP**, “*The MOSDEF Survey: The Evolution of the Mass-Metallicity Relation from  $z = 0$  to  $z \sim 3.3$* ,” 2021, [ApJ, 914, 19](#)

5. Runco, J. N., Shapley, A. E., Sanders, R. L., et al., including **SHP**, “*The MOSDEF survey: a comprehensive analysis of the rest-optical emission-line properties of  $z \sim 2.3$  star-forming galaxies*,” 2021, [MNRAS](#), 502, 2600
6. Johansson, J., Goobar, A., **Price, S. H.**, et al., “*Spectroscopy of the first resolved strongly lensed Type Ia supernova iPTF16geu*,” 2021, [MNRAS](#), 502, 510
7. Davies, R. L., Förster Schreiber, N. M., Genzel, R., et al., including **SHP**, “*The KMOS<sup>3D</sup> Survey: Investigating the Origin of the Elevated Electron Densities in Star-forming Galaxies at  $1 \lesssim z \lesssim 3$* ,” 2021, [ApJ](#), 909, 78
8. Belli, S., Contursi, A., Genzel, R., et al., including **SHP**, “*The Diverse Molecular Gas Content of Massive Galaxies Undergoing Quenching at  $z \sim 1$* ,” 2021, [ApJL](#), 909, L11
9. Chartab, N., Mobasher, B., Shapley, A. E., et al., including **SHP**, “*The MOSDEF Survey: Environmental Dependence of the Gas-phase Metallicity of Galaxies at  $1.4 \leq z \leq 2.6$* ,” 2021, [ApJ](#), 908, 120
10. Horstman, K., Shapley, A. E., Sanders, R. L., et al., including **SHP**, “*The MOSDEF survey: differences in SFR and metallicity for morphologically selected mergers at  $z \sim 2$* ,” 2021, [MNRAS](#), 501, 137
11. Übler, H., Genel, S., Sternberg, A., et al., including **SHP**, “*The kinematics and dark matter fractions of TNG50 galaxies at  $z = 2$  from an observational perspective*,” 2021, [MNRAS](#), 500, 4597
12. Reddy, N. A., Shapley, A. E., Kriek, M., et al., including **SHP**, “*The MOSDEF Survey: The First Direct Measurements of the Nebular Dust Attenuation Curve at High Redshift*,” 2020, [ApJ](#), 902, 123
13. Genzel, R., **Price, S. H.**, Übler, H., et al., “*Rotation Curves in  $z \sim 1$ -2 Star-forming Disks: Evidence for Cored Dark Matter Distributions*,” 2020, [ApJ](#), 902, 98
14. Jeong, M.-S., Shapley, A. E., Sanders, R. L., et al., including **SHP**, “*The MOSDEF Survey: Neon as a Probe of ISM Physical Conditions at High Redshift*,” 2020, [ApJL](#), 902, L16
15. Fetherolf, T., Reddy, N. A., Shapley, A. E., et al., including **SHP**, “*The MOSDEF survey: an improved Voronoi binning technique on spatially resolved stellar populations at  $z \sim 2$* ,” 2020, [MNRAS](#), 498, 5009
16. Suess, K. A., Kriek, M., **Price, S. H.**, & Barro, G., “*Color Gradients along the Quiescent Galaxy Sequence: Clues to Quenching and Structural Growth*,” 2020, [ApJL](#), 899, L26
17. Shivaee, I., Reddy, N., Rieke, G., et al., including **SHP**, “*The MOSDEF Survey: The Variation of the Dust Attenuation Curve with Metallicity*,” 2020, [ApJ](#), 899, 117
18. Davies, R. L., Förster Schreiber, N. M., Lutz, D., et al., including **SHP**, “*From Nuclear to Circumgalactic: Zooming in on AGN-driven Outflows at  $z \sim 2.2$  with SINFONI*,” 2020, [ApJ](#), 894, 28
19. Wilman, D. J., Fossati, M., Mendel, J. T., et al., including **SHP**, “*The Regulation of Galaxy Growth along the Size-Mass Relation by Star Formation, as Traced by H $\alpha$  in KMOS<sup>3D</sup> Galaxies at  $0.7 \lesssim z \lesssim 2.7$* ,” 2020, [ApJ](#), 892, 1
20. Sanders, R. L., Shapley, A. E., Reddy, N. A., et al., including **SHP**, “*The MOSDEF Survey: Direct-Method Metallicities and ISM Conditions at  $z \sim 1.5 - 3.5$* ,” 2020, [MNRAS](#), 491, 1427
21. Sanders, R. L., Jones, T., Shapley, A. E., et al., including **SHP**, “*The MOSDEF Survey: [S III] as a New Probe of Evolving Interstellar Medium Conditions*,” 2020, [ApJL](#), 888, L11
22. Wisnioski, E., Förster Schreiber, N. M., Fossati, M., et al., including **SHP**, “*The KMOS<sup>3D</sup> Survey: data release and final survey paper*,” 2019, [ApJ](#), 886, 124
23. Leung, G. C. K., Coil, A. L., Aird, J., et al., including **SHP**, “*The MOSDEF survey: a census of AGN-driven ionized outflows at  $z = 1.4 - 3.8$* ,” 2019, [ApJ](#), 886, 11
24. Suess, K. A., Kriek, M., **Price, S. H.**, & Barro, G., “*Half-mass radii of quiescent and star-forming galaxies evolve slowly from  $0 < z < 2.5$ : implications for galaxy assembly histories*,” 2019, [ApJL](#), 885, L22
25. Shimizu, T. T., Davies, R. I., Lutz, D., et al., including **SHP**, “*The multiphase gas structure and kinematics in the circumnuclear region of NGC 5728*,” 2019, [MNRAS](#), 490, 5860

26. Fornasini, F. M., Kriek, M., Sanders, R. L., et al., including **SHP**, “*The MOSDEF Survey: The Metallicity Dependence of X-ray Binary Populations at  $z \sim 2$* ,” 2019, [ApJ, 885, 65](#)
27. Shapley, A. E., Sanders, R. L., Shao, P., et al., including **SHP**, “*The MOSDEF Survey: Sulfur Emission-line Ratios Provide New Insights into Evolving Interstellar Medium Conditions at High Redshift*,” 2019, [ApJL, 881, L35](#)
28. Kriek, M., **Price, S. H.**, Conroy, C., et al., “*Stellar Metallicities and Elemental Abundance Ratios of  $z \sim 1.4$  Massive Quiescent Galaxies*,” 2019, [ApJL, 880, L31](#)
29. Übler, H., Genzel, R., Wisnioski, E., et al., including **SHP**, “*The Evolution and Origin of Ionized Gas Velocity Dispersion from  $z \sim 2.6$  to  $z \sim 0.6$  with KMOS<sup>3D</sup>*,” 2019, [ApJ, 880, 48](#)
30. Suess, K. A., Kriek, M., **Price, S. H.**, & Barro, G., “*Half-mass Radii for  $\sim 7000$  Galaxies at  $1.0 \leq z \leq 2.5$ : Most of the Evolution in the Mass-Size Relation Is Due to Color Gradients*,” 2019, [ApJ, 877, 103](#)
31. Förster Schreiber, N. M., Übler, H., Davies, R. L., et al., including **SHP**, “*The KMOS<sup>3D</sup> Survey: Demographics and Properties of Galactic Outflows at  $z = 0.6 - 2.7$* ,” 2019, [ApJ, 875, 21](#)
32. Wilson, T. J., Shapley, A. E., Sanders, R. L., et al., including **SHP**, “*The MOSDEF Survey: No Significant Enhancement in Star Formation or Deficit in Metallicity in Merging Galaxy Pairs at  $1.5 \lesssim z \lesssim 3.5$* ,” 2019, [ApJ, 874, 18](#)
33. Davies, R. L., Förster Schreiber, N. M., Übler, H., et al., including **SHP**, “*Kiloparsec Scale Properties of Star-Formation Driven Outflows at  $z \sim 2.3$  in the SINS/zC-SINF AO Survey*,” 2019, [ApJ, 873, 122](#)
34. Freeman, W. R., Siana, B., Kriek, M., et al., including **SHP**, “*The MOSDEF Survey: Broad Emission Lines at  $z = 1.4-3.8$* ,” 2019, [ApJ, 873, 102](#)
35. Nelson, E. J., Tadaki, K.-I., Tacconi, L. J., et al., including **SHP**, “*Millimeter Mapping at  $z \sim 1$ : Dust-obscured Bulge Building and Disk Growth*,” 2019, [ApJ, 870, 130](#)
36. Reddy, N. A., Shapley, A. E., Sanders, R. L., et al., including **SHP**, “*The MOSDEF Survey: Significant Evolution in the Rest-frame Optical Emission Line Equivalent Widths of Star-forming Galaxies at  $z = 1.4-3.8$* ,” 2018, [ApJ, 869, 92](#)
37. Zick, T. O., Kriek, M., Shapley, A. E., et al., including **SHP**, “*The MOSDEF Survey: Stellar Continuum Spectra and Star Formation Histories of Active, Transitional, and Quiescent Galaxies at  $1.4 < z < 2.6$* ,” 2018, [ApJL, 867, L16](#)
38. Azadi, M., Coil, A., Aird, J., et al., including **SHP**, “*The MOSDEF Survey: The Nature of Mid-infrared Excess Galaxies and a Comparison of IR and UV Star Formation Tracers at  $z \sim 2$* ,” 2018, [ApJ, 866, 63](#)
39. Sanders, R. L., Shapley, A. E., Kriek, M., et al., including **SHP**, “*The MOSDEF Survey: A Stellar Mass-SFR-Metallicity Relation Exists at  $z \sim 2.3$* ,” 2018, [ApJ, 858, 99](#)
40. Shivaeei, I., Reddy, N. A., Siana, B., et al., including **SHP**, “*The MOSDEF Survey: Direct Observational Constraints on the Ionizing Photon Production Efficiency,  $\xi_{\text{ion}}$ , at  $z \sim 2$* ,” 2018, [ApJ, 855, 42](#)
41. Übler, H., Genzel, R., Tacconi, L. J., et al., including **SHP**, “*Ionized and Molecular Gas Kinematics in a  $z = 1.4$  Star-forming Galaxy*,” 2018, [ApJL, 854, L24](#)
42. Barro, G., Kriek, M., Pérez-González, P. G., et al., including **SHP**, “*Spatially Resolved Kinematics in the Central 1 kpc of a Compact Star-forming Galaxy at  $z \sim 2.3$  from ALMA CO Observations*,” 2017, [ApJL, 851, L40](#)
43. Leung, G. C. K., Coil, A. L., Azadi, M., et al., including **SHP**, “*The MOSDEF Survey: The Prevalence and Properties of Galaxy-wide AGN-driven Outflows at  $z \sim 2$* ,” 2017, [ApJ, 849, 48](#)
44. Shapley, A. E., Sanders, R. L., Reddy, N. A., et al., including **SHP**, “*The MOSDEF Survey: First Measurement of Nebular Oxygen Abundance at  $z > 4$* ,” 2017, [ApJL, 846, L30](#)

45. Shivaiei, I., Reddy, N. A., Shapley, A. E., et al., including **SHP**, “*The MOSDEF Survey: Metallicity dependence of the PAH emission at High Redshift and Implications for 24 micron-inferred IR luminosities and star formation rates at  $z \sim 2$* ,” 2017, [ApJ](#), 837, 157
46. Azadi, M., Coil, A. L., Aird, J., et al., including **SHP**, “*The MOSDEF survey: AGN multi-wavelength identification, selection biases and host galaxy properties*,” 2017, [ApJ](#), 835, 27
47. Momcheva, I. G., Brammer, G. B., van Dokkum, P. G., et al., including **SHP**, “*The 3D-HST Survey: Hubble Space Telescope WFC3/G141 Grism Spectra, Redshifts, and Emission Line Measurements for  $\sim 100,000$  Galaxies*,” 2016, [ApJS](#), 225, 27
48. Sanders, R. L., Shapley, A. E., Kriek, M., et al., including **SHP**, “*The MOSDEF Survey: Detection of [OIII] $\lambda$ 4363 and the Direct-method Oxygen Abundance of a Star-forming Galaxy at  $z = 3.08$* ,” 2016, [ApJL](#), 825, L23
49. Shivaiei, I., Kriek, M., Reddy, N. A., et al., including **SHP**, “*The MOSDEF Survey: The Strong Agreement between H $\alpha$  and UV-to-FIR Star Formation Rates for  $z \sim 2$  Star-forming Galaxies*,” 2016, [ApJL](#), 820, L23
50. Sanders, R. L., Shapley, A. E., Kriek, M., et al., including **SHP**, “*The MOSDEF Survey: Electron Density and Ionization Parameter at  $z \sim 2.3$* ,” 2016, [ApJ](#), 816, 23
51. Shivaiei, I., Reddy, N. A., Shapley, A. E., et al., including **SHP**, “*The MOSDEF Survey: Dissecting the Star Formation Rate versus Stellar Mass Relation Using H $\alpha$  and H $\beta$  Emission Lines at  $z \sim 2$* ,” 2015, [ApJ](#), 815, 98
52. Kriek, M., Shapley, A. E., Reddy, N. A., et al., including **SHP**, “*The MOSFIRE Deep Evolution Field (MOSDEF) Survey: Rest-frame Optical Spectroscopy for  $\sim 1500$  H-selected Galaxies at  $1.37 < z < 3.8$* ,” 2015, [ApJS](#), 218, 15
53. Reddy, N. A., Kriek, M., Shapley, A. E., et al., including **SHP**, “*The MOSDEF Survey: Measurements of Balmer Decrements and the Dust Attenuation Curve at Redshifts  $z \sim 1.4-2.6$* ,” 2015, [ApJ](#), 806, 259
54. Shapley, A. E., Reddy, N. A., Kriek, M., et al., including **SHP**, “*The MOSDEF Survey: Excitation Properties of  $z \sim 2.3$  Star-forming Galaxies*,” 2015, [ApJ](#), 801, 88
55. Coil, A. L., Aird, J., Reddy, N., et al., including **SHP**, “*The MOSDEF Survey: Optical Active Galactic Nucleus Diagnostics at  $z \sim 2.3$* ,” 2015, [ApJ](#), 801, 35
56. Sanders, R. L., Shapley, A. E., Kriek, M., et al., including **SHP**, “*The MOSDEF Survey: Mass, Metallicity, and Star-formation Rate at  $z \sim 2.3$* ,” 2015, [ApJ](#), 799, 138
57. Skelton, R. E., Whitaker, K. E., Momcheva, I. G., et al., including **SHP**, “*3D-HST WFC3-selected Photometric Catalogs in the Five CANDELS/3D-HST Fields: Photometry, Photometric Redshifts, and Stellar Masses*,” 2014, [ApJS](#), 214, 24
58. Bergé, J., **Price, S.**, Amara, A., & Rhodes, J., “*On point spread function modelling: towards optimal interpolation*,” 2012, [MNRAS](#), 419, 2356

## Grants

2016	AAS International Travel Grant, Munich Joint Conference
2015	AAS International Travel Grant, IAU Symposium 319
2012	NSF Graduate Research Fellowship, UC Berkeley