

# GAGANDEEP S. ANAND

Staff Scientist ◇ [ganand@stsci.edu](mailto:ganand@stsci.edu) ◇ [gsanand.github.io](https://gsanand.github.io)

## CURRENT POSITION

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**Staff Scientist II, Science Support**

Aug. 2021 – Present

Employed at the Space Telescope Science Institute (Baltimore, MD) as a Staff Scientist working on the Advanced Camera for Surveys on the Hubble Space Telescope.

## EDUCATION

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**Institute for Astronomy, University of Hawaii**

*December 2018/August 2021*

MS/PhD in Astronomy

Thesis: Tip of the Red Giant Branch Distances to Nearby Galaxies

Advisor: Professor R. Brent Tully

**Boston University**

*May 2017*

M.A. in Astronomy

**Vassar College**

*May 2015*

A.B. in Astronomy & Physics, Minor in Mathematics

## PREVIOUS RESEARCH POSITIONS

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**Graduate Research Assistant, University of Hawaii**

Aug. 2017 – Aug. 2021

**Visiting Graduate Research Fellow, IPAC/Caltech**

Feb. 2020 – July 2020

**Visiting Scholar, W.M. Keck Observatory**

July 2017 – Aug. 2017

**Graduate Researcher, Boston University**

July 2015 – May 2017

**Summer Researcher, Colby College**

May 2014 – Aug. 2014

**Observatory Assistant, Vassar College**

Sept. 2011 – May 2015

## COMPUTATIONAL SKILLS

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**Operating Systems**

Windows, MacOS/OS X, UNIX/Linux

**Computer Languages**

IDL, L<sup>A</sup>T<sub>E</sub>X, Python

**Astronomical Software**

CIAO, DOLPHOT, DrizzlePac, DS9, GALFIT, IRAF, XSPEC

**Amazon Web Services**

Amplify, EC2, IAM, Lambda, S3

**Miscellaneous Software/Tools**

Git, Lightroom

## PUBLICATION SUMMARY

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[NASA/ADS Link to All Publications](#)

36 Refereed Publications (7 as first author)

3 Papers Under Review (All as co-author)

2 Instrument Science Reports (1 as first author)

1200+ Citations (220+ as first author), h-index = 13

## HONORS/AWARDS

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George and Mona Elmore Award for Research in Astronomy	ARCS Foundation, 2020
IPAC/Caltech Visiting Graduate Fellowship	IPAC/Caltech, 2020
W. M. Keck Observatory Visiting Scholarship	Keck Observatory, 2017
Departmental Honors in Astronomy	Vassar College, 2015

## RECENT MEDIA COVERAGE

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<a href="#">Peekaboo! Tiny, Hidden Galaxy Provides a Peek Into the Past</a>	NASA/Hubble, 2022
<a href="#">Investigating A Made-to-Measure Galaxy</a>	ESA/Hubble, 2022
<a href="#">Astronomers Map Distances to 56,000 Galaxies</a>	University of Hawaii, 2022
<a href="#">Hubble Identifies Unusual Wrinkle in Universe's Expansion</a>	CNN, 2022
<a href="#">Capturing All That Glitters in Galaxies With NASA's Webb</a>	NASA/JWST, 2022
<a href="#">Scientists Finally Confirm Elusive Third Type of Supernova</a>	Smithsonian, 2021
<a href="#">Hubble Captures Cosmic Cinnamon Bun</a>	NASA/Hubble, 2020
<a href="#">A Waterfall of Stars</a>	ESA/Hubble, 2020
<a href="#">ARCS Scholar Awards</a>	University of Hawaii, 2020
<a href="#">Hubble Views a Galaxy on the 'Dark Side'</a>	NASA/Hubble, 2020

## OUTREACH ACTIVITIES

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ESA/Hubble Picture of the Week Series	2019–Present
Institute for Astronomy, Misc. Outreach Activities	2017–2021
Boston University Astronomy Open Nights	2015–2017
Vassar College Astronomy Open Nights	2011–2015

## PROFESSIONAL MEMBERSHIPS

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American Astronomical Society, Full Member	2021–Present
American Astronomical Society, Junior Member	September 2016–2021

## PROFESSIONAL SERVICE

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Referee	Astrophysical Journal (2+ papers), July 2018–Present
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## TEACHING EXPERIENCE

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<b>Department of Astronomy</b> <i>Teaching Fellow</i>	Sept. 2015 –May 2017 <i>Boston University</i>
<ul style="list-style-type: none"><li>· Astronomy 203- Principles of Astronomy II (Spring 2017)</li><li>· Astronomy 109- Cosmology (Fall 2015/Fall 2016)</li><li>· Astronomy 105- Alien Worlds (Spring 2016)</li></ul>	
<b>Department of Physics &amp; Astronomy</b> <i>Astronomy Academic Intern</i>	Sept. 2014 –May 2015 <i>Vassar College</i>
<ul style="list-style-type: none"><li>· Astronomy 105- Stars, Galaxies, &amp; Cosmology (Spring 2015)</li><li>· Astronomy 101- Solar System Astronomy (Fall 2014)</li></ul>	

## INSTRUMENT SCIENCE REPORTS

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### Improved Absolute Astrometry for ACS and WFC3 Data Products

Mack, J., Hack, W., Burger, M., White, R. L., Bajaj, V., Avila, R. J., **Anand, G. S.**, de la Pena, M., [Instrument Science Report, ACS, 2022-03](#)

### Revisiting ACS/WFC Sky Backgrounds

**Anand, G. S.**, Grogin, N., & Anderson, J., [Instrument Science Report, ACS, 2022-01](#)

## FIRST AUTHOR PUBLICATIONS

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### Comparing Tip of the Red Giant Branch Distance Scales: An Independent Reduction of the Carnegie-Chicago Hubble Program and the Value of the Hubble Constant

**Anand, G. S.**, Tully, R. B., Rizzi, L., Riess, A. G., & Yuan, W., 2022, [ApJ](#)

### The Extragalactic Distance Database: The Color-Magnitude Diagrams and Tip of the Red Giant Branch Distances Catalog

**Anand, G. S.**, Rizzi, L., Tully, R. B., et al., 2021, [AJ](#)

### Distances to PHANGS Galaxies: New Tip of the Red Giant Branch Measurements and Adopted Distances

**Anand, G. S.**, Lee, J., Van Dyk, S., et al., 2021, [MNRAS](#)

### Peculiar Velocities of Galaxies Just Beyond the Local Group

**Anand, G. S.**, Tully, R. B., Rizzi, L., Shaya, E., & Karachentsev, I. D., 2019, [ApJ](#)

### The Distance and Motion of the Maffei Group

**Anand, G. S.**, Tully, R. B., Rizzi, L., & Karachentsev, I. D., 2019, [ApJL](#)

### A Robust Tip of the Red Giant Branch Distance to the Fireworks Galaxy (NGC 6946)

**Anand, G. S.**, Rizzi, L., & Tully, R. B., 2018, [AJ](#)

### The Distance to the Galaxy Coma P

**Anand, G. S.**, Tully, R. B., Karachentsev, I. D., Makarov, D. I., Makarova, L.; Rizzi, L.; Shaya, E. J., 2018, [ApJL](#)

## CO-AUTHOR PUBLICATIONS

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### Serendipitous Nebular-phase JWST Imaging of SN Ia 2021aefx:

#### Testing the Confinement of 56-Co Decay Energy

Mayker Chen, N., Tucker, M., Hoyer, N., [5 authors], **Anand, G. S.**, [19 authors], [Submitted to ApJL](#)

### Comparative Analysis of TRGBs (CATs) from Unsupervised, Multi-Halo-Field Measurements: Contrast is Key

Wu, J., Scolnic, D., Riess, A. G., **Anand, G. S.**, Beaton, R., Casertano, S., Ke, X., & Li, S. [Submitted to ApJ](#)

### The PHANGS-JWST Treasury Survey: Star Formation, Feedback, and Dust Physics at High Angular resolution in Nearby Galaxies

Lee, J. C., Sandstrom, K. M., Leroy, A. K., Thilker, D. A., Schinnerer, E., [6 authors], **Anand, G. S.**, [65 authors], 2023, [ApJL](#)

### PHANGS-JWST First Results: The Dust Filament Network of NGC 628 and its Relation to Star Formation Activity

Thilker, D. A., Lee, J. C., Deger, S., [24 authors], **Anand, G. S.**, [11 authors], 2023, [ApJL](#)

- PHANGS-JWST First Results: Stellar Feedback-Driven Excitation and Dissociation of Molecular Gas in the Starburst Ring of NGC 1365?**  
Liu, D., Schinnerer, E., Cao, Y., Leroy, A., [24 authors], *Anand, G. S.*, [12 authors], 2023, [ApJL](#)
- PHANGS-JWST First Results: A statistical view on bubble evolution in NGC628**  
Watkins, E. J., Barnes, A., [11 authors], *Anand, G. S.*, [38 authors], 2022, [ApJL](#)
- PHANGS-JWST First Results: Dust Embedded Star Clusters in NGC 7496 Selected via 3.3  $\mu\text{m}$  PAH Emission**  
Rodriguez, J., Lee, J., Whitmore, B., Thilker, D., [11 authors], *Anand, G. S.*, [25 authors], 2023, [ApJL](#)
- Peekaboo: The Extremely Metal Poor Dwarf Galaxy HIPASS J1131-31**  
Karachentsev, I. D., Makarova, L. N., Koribalski, B. S., *Anand, G. S.*, Tully, R. B., & Kniazev, A. Y., 2023, [MNRAS](#)
- The Whisper of a Whimper of a Bang: 2400 Days of the Type Ia SN 2011fe Reveals the Decay of  $^{55}\text{Fe}$**   
Tucker, M. A., Shappee, B. J., Kochanek, C.S., Stanek, K.Z., Ashall, C., *Anand, G. S.*, & Garnavich, P., 2022, [MNRAS](#)
- Cosmicflows-4**  
Tully, R. B., Kourkchi, E., Courtois, H. M., *Anand, G. S.*, [13 authors], 2022, [ApJ](#)
- PHANGS: Constraining Star Formation Timescales Using the Spatial Correlations of Star Clusters and Giant Molecular Clouds**  
Turner, Jordan A., Dale, Daniel A., Lilly, James, [4 authors], *Anand, G. S.*, [17 authors], 2022, [MNRAS](#)
- A Comprehensive Measurement of the Local Value of the Hubble Constant with 1 km/s/Mpc Uncertainty from the Hubble Space Telescope and the SH0ES Team**  
Riess, A. G., Yuan, W., Macri, L. M., [5 authors], *Anand, G. S.*, [9 authors] 2022, [ApJL](#)
- Around the Spindle Galaxy: The Dark Halo Mass of NGC 3115**  
Karachentsev, I. D., Makarova, L. N., *Anand, G. S.*, & Tully, R. B., 2022, [AJ](#)
- PNLF Distances for 19 Galaxies Observed by PHANGS-MUSE**  
Scheuermann, F., Kreckel, K. *Anand, G. S.*, [3 authors], Van Dyk, S. D., [11 authors], 2022, [A&A](#)
- The PHANGS-MUSE survey. Probing the chemo-dynamical evolution of disc galaxies**  
Emsellem, E., Schinnerer, E., Santoro, F., [18 authors], *Anand, G. S.*, [26 authors], 2022, [A&A](#)
- KK 242, A Faint Companion to the Isolated Scd Galaxy NGC 6503**  
Karachentsev, I. D., Cannon, J. M., Fuson, J., Inoue, J. L., Tully, R. B., *Anand, G. S.*, & Kaisin, S. S., 2022, [AJ](#)
- Late-Onset Circumstellar Medium Interactions are Rare: An Unbiased GALEX View of Type Ia Supernovae**  
Dubay, L., Tucker, M., Do, A., Shappee, B., *Anand, G. S.*, 2022, [ApJ](#)
- The PHANGS-HST Survey: Physics at High Angular resolution in Nearby Galaxies with the Hubble Space Telescope**  
Lee, Janice C., Whitmore, Bradley C., Thilker, David A., Deger, Sinan, Larson, Kirsten L., Ubeda, Leonardo, *Anand, G. S.*, [10 authors], White, R. L., [36 authors], 2022, [ApJS](#)

- Measuring an off-Center Detonation through Infrared Line Profiles: The peculiar Type Ia Supernova SN 2020qxp/ASASSN-20jq**  
 Hoefflich, P., Ashall, C., Bose, S., [4 authors], *Anand, G. S.*, [12 authors], 2021, [ApJ](#)
- PHANGS–ALMA: Arcsecond CO(2–1) Imaging of Nearby Star-Forming Galaxies**  
 Leroy, A., Schinnerer, E., Hughes, A., [16 authors], *Anand, G. S.*, [52 authors], 2021, [ApJS](#)
- SN2019yvv Does Not Conform to SN Ia Explosion Models**  
 Tucker, M. A., Ashall, C., Shappee, B. J., Vallely, P. J., Kochanek, C. S., Huber, M. E., *Anand, G. S.*, Keane, J. V., Hsiao, E. Y., Holoien, T. W. S., 2021, [ApJ](#)
- PHANGS-ALMA Data Processing and Pipeline**  
 Leroy, A., Hughes, A., Liu, D., [16 authors], *Anand, G. S.*, [47 authors], 2021, [ApJS](#)
- The Cepheid Distance to the Narrow-Line Seyfert 1 Galaxy NGC 4051**  
 Yuan, W., Macri, L., Peterson, B. M., Riess, A. G., Fausnaugh, M. M., Hoffman, S. L., *Anand, G. S.*, [11 authors], 2021, [ApJ](#)
- The Distance and Mass of the NGC 253 Galaxy Group**  
 Karachentsev, I. D., Tully, R. B., *Anand, G. S.*, Rizzi, L., Shaya, E. J., 2021, [AJ](#)
- The Electron-capture Origin of Supernova 2018zd**  
 Hiramatsu, D., Howell, D. A., Van Dyk, S. D., [19 authors], *Anand, G. S.*, [7 authors], 2021, [Nature Astronomy](#)
- The Properties of Dwarf Spheroidal Galaxies in the Cen A Group: Stellar Populations, Internal Dynamics, and a Heart-Shaped H $\alpha$  Ring?**  
 Müller, O., Fahrion, K., Rejkuba, M., Hilker, M., Lelli, F., Lutz, K., Pawlowski, M. S., Coccato, L., *Anand, G. S.*, & Jerjen, H., 2020, [A&A](#)
- Distance and Mass of the M104 (Sombrero) Group**  
 Karachentsev, I. D., Makarova, L. N., Tully, R. B.; *Anand, G. S.*; Rizzi, L., Shaya, E. J., 2020, [A&A](#)
- KKH 22, The First Dwarf Spheroidal Satellite of IC 342**  
 Karachentsev, I. D., Makarova, L. N., Tully, R. B.; *Anand, G. S.*; Rizzi, L., Shaya, E. J., Afanasiev, V. L., 2020, [A&A](#)
- Cosmicflows-4: The Calibration of Optical and Infrared Tully-Fisher Relations**  
 Kourkchi, E.; Tully, R. B., *Anand, G. S.*, Courtois, H. M., Dupuy, A., Neill, J. D., Rizzi, L., Seibert, M., 2020, [ApJ](#)
- Does Gravity Fall Down? Evidence for Gravitational-wave Deflection along the Line of Sight to GW170817**  
 Rubin, D., Szapudi, I., Shappee, B. J., *Anand, G. S.*, 2020, [ApJL](#)
- The High-Redshift Clusters Occupied by Bent Radio AGN (COBRA) Survey**  
 Paterno-Mahler, R., Blanton, E. L., Ashby, M. L. N., Brodwin, M., Wing, J. D., Decker, B., Golden-Marx, E., & *Anand, G. S.*, 2017, [ApJ](#)

## INVITED TALKS

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### **Cosmicflows-4: Tip of the Red Giant Branch Distances**

American Museum of Natural History, New York, NY- September 2021

Herzberg Astronomy and Astrophysics Research Centre, NRC Canada- April 2021

UMass Amherst Galaxy Lunch Talk, Amherst, MA- March 2021

### **PHANGS-HST: New Tip of the Red Giant Branch Distances**

IPAC Colloquium, Pasadena, CA- July 2020

## CONTRIBUTED TALKS

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### **Tip of the Red Giant Branch Distances to Nearby Galaxies**

Caltech Tea Talk- June 2020

Visiting Scholars Talk, W.M. Keck Observatory- August 2017

### **Peculiar Velocities of Galaxies Just Beyond the Local Group**

Constrained Local Universe Simulations 2019 Meeting, University of Lyon- September 2019

### **Exploring the Structural Evolution of Massive Quiescent Galaxies**

Keck Northeast Astronomy Consortium- November 2014

Colby Undergraduate Summer Research Retreat- July 2014

### **Observations and Analysis of Orbital Period Changes in Contact Binaries**

Keck Northeast Astronomy Consortium- October 2013

## CONFERENCE POSTERS

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### **PHANGS-HST: New Tip of the Red Giant Branch Distances**

236th Meeting of the American Astronomical Society- June 2020

### **The Extragalactic Distance Database: Color-Magnitude Diagrams and Tip of the Red Giant Branch Distances**

235th Meeting of the American Astronomical Society- January 2020

### **Tip of the Red Giant Branch Distances to Nearby Galaxies**

Stars: Birth and Death, GMT Community Science Meeting- September 2018

The 21st Century HR Diagram, Space Telescope Science Institute- April 2018

### **Chandra Observation of the WAT Radio Source/ICM Interaction in Abell 623**

229th Meeting of the American Astronomical Society- January 2017

Chandra Science for the Next Decade, Harvard-Smithsonian Center for Astrophysics- August 2016

### **Observations and Analysis of Orbital Period Changes in Contact Binaries**

Vassar Undergraduate Research Summer Institute- July 2013