Wenlong Yuan

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Education & Positions

Postdoc Fellow **2017 – present**
Department of Physics and Astronomy, Johns Hopkins University
Supervisor: Adam Riess

Ph.D., Physics **2012 – 2017**
Department of Physics and Astronomy, Texas A&M University
Advisor: Lucas Macri

B.S., Physics **2008 – 2012**
School of Physics, Shandong University

Research Interests Keywords

Observational Cosmology: Hubble Constant, Extragalactic Distance Scale

Variable Stars: Time-series Surveys, Classical Cepheids, Long-period Variables

Distance Calibration: Period–Luminosity Relations, Parallax, Tip of the Red Giant Branch

Scientific and Technical Skills

Photometry: Multi-year experience in *HST* image reduction, PSF photomety & calibration

Methods: Skilled in linear algebra & machine learning algorithm for astronomical dataset

Programming: Proficient in `Python` and `R`;
Developed SH0ES reduction & photometry pipeline

Computing: Capable of handling large scale computation with `SLURM`-based supercomputer

Services and Public Outreach

Johns Hopkins University Astrocoffee journal club organizer	2017 – 2019
Guest speaker (Skype) to astronomy class at Dartmouth College	October, 2018
Texas A&M Public Star Parties	Spring 2013, 2016
Texas A&M Physics and Astronomy Festival	April 2013 – 2016

Research Projects as Investigator

1. PI: Refining the Mira Distance Scale and Hubble Constant for the Era of JWST and WFIRST (HST-GO-16250)

2. Co-I: A Mira Distance to M101: Towards a Sub-3% Measurement of the Hubble Constant with Miras (HST-AR-16132)

3. Co-I: From Masers to Coma, A Single Step Measurement of the Hubble Constant and a Reservoir of New SNe Ia (HST-GO-16198)

4. Co-I: Tension at the Breaking Point: Uncovering New Physics Through a Two-Rung Distance Ladder Measurement of the Hubble Constant (HST-GO-16269)

5. Co-I: The Hubble Constant to 1%: Physics beyond ΛCDM (HST-GO-15145)

6. Co-I: A New Threshold of Precision, 30 μas Parallaxes and Beyond (HST-GO-15146)

7. Co-I: The Search for New Physics Amid the Hubble Constant Tension (HST-GO-15640)

8. Co-I: A Measurement of the Gaia Offset to Build a Superior Distance Ladder and Resolve the Origin of the Hubble Tension (HST-SNAP-15879)

9. Co-I: Towards a 2% Measurement of H_0: Near-infrared Light Curves of Galactic Cepheids (NOAO 2014A-0410, 2015A-0150)

Talks and Posters

1. **Poster** @ UCSB KITP: Tensions Between the Early and the Late Universe, 07/2019
   The Calibration of the Tip of the Red Giant Branch in the Large Magellanic Cloud on the Hubble Space Telescope Photometric System

2. **Talk** @ Johns Hopkins University Wine and Cheese Seminar, 04/2018
   Period–Luminosity Relations of Mira Variables and Their Application to the Extragalactic Distance Scale

3. **Dissertation Talk** @ AAS Meeting #229, 01/2017
   A Search for Miras in M33 Using Sparsely-Sampled Time Series Photometry

4. **Poster** @ AAS Meeting #229, 01/2017
   Mira Period-Luminosity Relations at Near-Infrared

5. **Poster** @ SAMSI ASTRO Workshop, 08/2016
   Mira Identification in M33 with Sparse Time Series

6. **Talk** @ Indo-US Variable Star Workshop, 06/2015
   A Search for Miras in M33

7. **Poster** @ Joint Meeting of the Texas Section of the APS, 10/2014
   Mega-SH0ES: Near Infrared Cepheid P-L Relation from Milky Way to M101

8. **Talk** @ MIAPP Extragalactic Distance Scale Workshop, 06/2014
   The Cepheid P-L Relation at Near-Infrared Wavelengths: M101 and the Milky Way

9. **Poster** @ AAS Meeting #223, 01/2014
   Mega-SH0ES: A Cepheid Distance to M101 Based on WFC3 H-band Photometry

Published Journal Articles

ADS link: `https://ui.adsabs.harvard.edu/public-libraries/QBFJLGOpS_qQcUjTkrx14w`

First-Author Papers (Cited: ∼100)

1. The Cepheid Distance to the Seyfert 1 Galaxy NGC 4151
   W. Yuan, M. Fausnaugh, S. Hoffmann, L. Macri, B. Peterson, A. Riess *and 5 more*
   eprint arXiv:2007.07888 (2020); Submitted

2. Consistent Calibration of the Tip of the Red Giant Branch in the Large Magellanic Cloud on the Hubble Space Telescope Photometric System and a Re-determination of the Hubble Constant
   W. Yuan, A. Riess, L. Macri, S. Casertano & D. Scolnic
   The Astrophysical Journal (2019)

3. Near-infrared Mira Period–Luminosity Relations in M33
   W. Yuan, L. Macri, A. Javadi, Z. Lin, J. Huang
   The Astronomical Journal (2018)

4. Large Magellanic Cloud Near-infrared Synoptic Survey. V. Period–Luminosity Relations of Miras
   W. Yuan, L. Macri, S. He, J. Huang, S. Kanbur & C. Ngeow
   The Astronomical Journal (2017)

5. The M33 Synoptic Stellar Survey. II. Mira Variables
   W. Yuan, S. He, L. Macri, J. Long & J. Huang
   The Astronomical Journal (2017)

Contributed Papers (Cited: ∼2000)

1. The Accuracy of the Hubble Constant Measurement Verified through Cepheid Amplitudes

   A. Riess, **W. Yuan**, S. Casertano, L. Macri & D. Scolnic
   The Astrophysical Journal Letters (2020)

2. Hubble Space Telescope Observations of Mira Variables in the Type Ia Supernova Host NGC 1559: An Alternative Candle to Measure the Hubble Constant

   C. Huang, A. Riess, **W. Yuan**, L. Macri, N. Zakamska, S. Casertano *and 4 more*
   The Astrophysical Journal (2020)

3. Large Magellanic Cloud Cepheid Standards Provide a 1% Foundation for the Determination of the Hubble Constant and Stronger Evidence for Physics beyond ΛCDM

   A. Riess, S. Casertano, **W. Yuan**, L. Macri, D. Scolnic
   The Astrophysical Journal (2019)

4. Milky Way Cepheid Standards for Measuring Cosmic Distances and Application to Gaia DR2: Implications for the Hubble Constant

   A. Riess, S. Casertano, **W. Yuan**, L. Macri, B. Bucciarelli, M. Lattanzi *and 6 more*
   The Astrophysical Journal (2018)

5. New Parallaxes of Galactic Cepheids from Spatially Scanning the Hubble Space Telescope: Implications for the Hubble Constant

   A. Riess, S. Casertano, **W. Yuan**, L. Macri, J. Anderson, J. MacKenty *and 5 more*
   The Astrophysical Journal (2018)

6. A Near-infrared Period–Luminosity Relation for Miras in NGC 4258, an Anchor for a New Distance Ladder

   C. Huang, A. Riess, S. Hoffmann, C. Klein, J. Bloom, **W. Yuan**, L. Macri *and 4 more*
   The Astrophysical Journal (2018)

7. Monitoring Luminous Yellow Massive Stars in M33: New Yellow Hypergiant Candidates

   M. Kourniotis, A. Bonanos, **W. Yuan**, L. Macri, D. Garcia-Alvarez & C. Lee
   Astronomy & Astrophysics (2017)

8. Period Estimation for Sparsely-sampled Quasi-periodic Light Curves Applied to Miras

   S. He, **W. Yuan**, J. Huang, J. Long & L. Macri
   The Astronomical Journal (2016)

9. Optical Identification of Cepheids in 19 Host Galaxies of Type Ia Supernovae and NGC 4258 with the Hubble Space Telescope

   S. Hoffmann, L Macri, A. Riess, **W. Yuan**, S. Casertano, R. Foley *and 7 more*
   The Astrophysical Journal (2016)

10. A 2.4% Determination of the Local Value of the Hubble Constant

    A. Riess, L. Macri, S. Hoffmann, D. Scolnic, S. Casertano *and 10 more including* **W. Yuan**
    The Astrophysical Journal (2016)

11. GW150914: First Search for the Electromagnetic Counterpart of a Gravitational-wave Event by the TOROS Collaboration

    M. Diaz, M. Beroiz, T. Penuela, L. Macri, R. Oelkers, **W. Yuan**, L. Garcia *and 27 more*
    The Astrophysical Journal Letters (2016)

12. Photometry of Variable Stars from the THU-NAOC Transient Survey. I. The First Two Years

    X. Yao, L. Wang, X. Wang, T. Zhang, J. Chen, **W. Yuan**, J. Mon *and 5 more*
    The Astronomical Journal (2015)