Corey D. Austin, PhD

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SUMMARY

Post-doctoral fellow with 5+ years of post-graduate research experience with a passion for sharing scientific knowledge. My research has focused on using computational and numerical methods to characterize and eliminate noise in scientific instruments. I gained teaching experience during graduate school and have consistently volunteered for opportunities to give tours and seminars to educate the public on the scientific missions of the various institutions where employed.

WORK EXPERIENCE

Brookhaven National Laboratory **June 2023 – Present**

Postdoctoral fellow *Upton, NY*

- Developed a new optical CMM instrument utilizing white-light interferometers. Integrated hardware and wrote software to control the instrument and to collect and analyze data from the instrument.
- Built optical models of the collimated phase measuring deflectometry instrument and re-designed the optical layout to increase the measuring range of the system. Used classical numerical methods and machine learning to characterize noise in the instrument.
- Performed instrument noise characterization of the relative angle determinable stitching interferometer (RADSI) instrument and identified areas for possible instrument performance improvement.

NASA **Jan. 2021 – May 2023**

Postdoctoral fellow *Greenbelt, MD*

- Performed tolerancing analysis of individual optical components of the telescopes for the LISA mission.
- Developed a Monte Carlo simulation that predicted damage to the primary mirror of the LISA telescope due to micrometeoroid impacts.
- Generated test procedures for verification testing of prototype hardware.

Louisiana State University **Jan. 2016 – Dec. 2020**

Research Assistant *Baton Rouge, LA*

- Improved the sensitivity of the LIGO detectors by reducing stray light noise. Utilized numerical methods to search for correlations between the gravitational wave channel and the thousands of auxiliary channels to find and eliminate sources of noise.
- Visited schools and universities and volunteered to lead Science Saturdays at LIGO to educate the public on the science mission and results obtained by LIGO.
- Taught undergraduate physics laboratory courses and served as web administrator for all lab courses. Worked as a teaching assistant for graduate computational physics course. Performed work as a physics tutor both in the physics tutoring center and as a private tutor.

Louisiana Tech University **Aug. 2013 – Dec. 2015**

Research Assistant *Ruston, LA*

- Developed a method for non-contact, non-destructive testing of rotating machinery using magnetostrictive materials to perform in-situ inspections.
- Taught introductory physics laboratory courses and maintained equipment for those courses.

EDUCATION

Louisiana State University **December 2020**
PhD in Physics *Baton Rouge, LA*
Measurements and Mitigation of Scattered Light Noise in LIGO Detectors

Louisiana Tech University **December 2015**
MS in Applied Physics *Ruston, LA*
Non-contact, Non-destructive Testing of Rotating Shafts Using Pitch-Catch Technique

Louisiana State University **August 2005**
BS in General Studies *Baton Rouge, LA*

SELECTED PUBLICATIONS

- C. Austin, W. Shang, L. Huang, T. Wang, C. Paterson, P. Török, M. Idir, "Collimated phase measuring deflectometry II: Re-design of the optical layout for high-curvature surfaces", Optics and Lasers in Engineering, Volume 194, 2025, 109173, ISSN 0143-8166, https://doi.org/10.1016/j.optlaseng.2025.109173.
- L. Huang, T. Wang, C. Austin, L. Lienhard, Y. Hu, C. Zuo, D. Kim, M. Idir, "Collimated phase measuring deflectometry", Optics and Lasers in Engineering, Volume 172, 2024, 107882, ISSN 0143-8166, https://doi.org/10.1016/j.optlaseng.2023.107882.
- Lienhard, L, Austin, C., Xu, W., Idir, M., Hulbert, S., Nazaretski, E., Coburn, D., Wang, T. and Huang, L., "Mechanical Design of a Parallel Flexure-based RADSI Instrument for Curved X-ray Mirror Metrology at NSLS-II", Review of Scientific Instrument, Under Review.
- L. Huang, T. Wang, C. Austin, D. Kim, and M. Idir, "Two-step retrace error calibration removing tilt ambiguity in coherence scanning interferometry," Opt. Lett. 49, 590-593 (2024).
- L. Huang, T. Wang, C. Austin, M. Idir, "Synchrotron mirror inspection and fabrication using stitching interferometry and ion beam figuring at NSLS-II," Proc. SPIE 12997, Optics and Photonics for Advanced Dimensional Metrology III, 129970K (18 June 2024); https://doi.org/10.1117/12.3022745
- P. Nguyen, R. M. Schofield, A. Effler, C. Austin, V. Adya, M. Ball, S. Banagiri, et al. "Environmental Noise in Advanced LIGO Detectors." Classical and Quantum Gravity 38, no. 14 (June 2021): 145001. https://doi.org/10.1088/1361-6382/ac011a.
- S. Soni, C Austin, A. Effler, R. M. Schofield, G. González, V. Frolov, J. C. Driggers, et al. "Reducing Scattered Light in LIGO's Third Observing Run." Classical and Quantum Gravity 38, no. 2 (December 2020): 025016. https://doi.org/10.1088/1361-6382/abc906.