

Zubair Abdulla | Curriculum Vitae

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I am a recent PhD graduate in astrophysics from the University of Chicago with a wide-ranging background in lab work, radio astronomy, data reduction, data analysis, and imaging. My goal is to join an ambitious engineering or R&D project with a positive public impact where I can apply my unique experience from a broad research background and continue to learn as part of a collaboration.

Education

- **University of Chicago** **Chicago**
2009–2018
PhD/MA in Astronomy and Astrophysics, Advisor: John Carlstrom
Thesis: Constraining the Thermal Contents of X-ray Cavities in Galaxy Clusters with Sunyaev Zel'dovich Effect Observations
- **University of Illinois, Urbana-Champaign** **Urbana-Champaign**
2005–2009
B. Eng in Engineering Physics

Experience

Research Experience

- **Research Assistant** 2010–2018
University of Chicago, CARMA-SZ collaboration
Instrumentation: Lead a project involving the building of ten 30 GHz heterodyne radio receivers for integration with the **Combined Array for Research in Millimeter Astronomy**, an interferometric radio telescope in Cedar Flat, CA (mmarray.org). In 2012-2013, I spent ~ 3 months on-site installing, aligning, and debugging the instrument in preparation for commissioning observations in 2013.
Data Analysis: My PhD thesis project made use of the data acquired from the newly built 30 GHz CARMA instrument to study the nature of the most powerful outbursts in the universe. I worked with large sets of interferometric data from CARMA, which included noise analysis, calibration, imaging and deconvolution analysis, and modeling.

Other Experience

- **Teaching Assistant** 2009–2010
University of Chicago
Taught introductory astrophysics and cosmology and instructed lab sessions. I additionally maintained an undergraduate lab that used state-of-the-art technology to measure the temperature of the Cosmic Microwave Background in following years (2010-2017)
- **Student Mentor** 2010–2016
University of Chicago
Mentored and supervised the work of a visiting graduate student and several undergraduates in both data analysis and lab work: Jonathan Florez (Fisk-Vanderbilt Master's to PhD Bridge Program) and Stephan Reyes, Mike Karfunkle, and Jack Orlowski Scherer (University of Chicago undergraduates). Jonathan, Jack, and Stephen have continued on to graduate programs.

- **Observer**
CARMA 2010–2015
Spent 100+ days on 24/7 observing shifts managing observing queues, troubleshooting telescope array faults, and maintaining telescope health.
- **Athletic Coach**
University of Chicago 2010–2018
Coached the men's ultimate frisbee team at the University of Chicago, teaching sport-specific skills, athleticism, and sportsmanship; Great Lakes Region quarterfinalists (2011, 2013, 2016), Semi-finalist (2014, 2018), and Finalist (2017)
- **Undergraduate Research Assistant**
University of Wisconsin 2008
Research Education for Undergraduates (REU) position where I worked on a summer project prototyping a compact variable blackbody temperature load for calibration of a microwave bolometer telescope
- **Lab Assistant**
University of Illinois, Urbana-Champaign 2007
Carried out various lab work, soldering and wiring jobs, and cryogenic equipment setup

Technical skills

- **Programming:** Python, Matlab, TeX; Also basic familiarity with: C++, IDL
- **Lab work:** soldering, cryogenics, basic machining, RF electronics
- **Data Analysis:** statistical analysis, modeling, astronomical imaging, fourier analysis, interferometry

Selected Publications

- Constraints on the Thermal Contents of the X-ray cavities of MS 0735+741 with Sunyaev Zel'dovich Effect Observations. **Abdulla, Zubair** et al., *The Astrophysical Journal*, accepted December 2018
- The XXL Survey: XVII. X-ray and Sunyaev-Zel'dovich Properties of the Redshift 2.0 Galaxy Cluster XLSSC 122. Mantz, Adam B. et al.; **Abdulla, Zubair**. *Astronomy and Astrophysics*, accepted March 2017
- The Massive and Distant Clusters of WISE Survey: MOO J1142+1527, a $10^{15} M_{\odot}$ Galaxy Cluster at $z = 1.19$. Gonzalez, Anthony H. et al.; **Abdulla, Zubair**. *The Astrophysical Journal Letters*, Volume 812, Issue 2, article id. L40, 6 pp. (2015).
- CARMA Measurements of the Sunyaev-Zel'dovich Effect in RX J1347.5-1145. Plagge, Thomas J. et al.; **Abdulla, Zubair**. *The Astrophysical Journal*, Volume 770, Issue 2, article id. 112, 8 pp. (2013).

References

- **Dr. John E. Carlstrom**
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