

EVAN J. ARENA

Ph.D. Student ◊ Department of Physics ◊ Drexel University
Disque Hall, Office No. 808 ◊ 32 S. 32nd St. ◊ Philadelphia, PA 19104, USA
+1 · (516) · 383 · 4817 ◊ evan.james.arena@drexel.edu

RESEARCH INTERESTS

Theoretical astrophysics and cosmology, including general relativity, gravitational lensing, modified gravity, large-scale structure, 21 cm cosmology, dark energy, inflation, dark matter, radio astronomy, and gravitational waves.

EDUCATION

Drexel University Ph.D. Student of Physics	2018 – Present
Sony Brook University B.S. in Physics and Astronomy/Planetary Sciences <i>Cum Laude</i> <i>Departmental Honors in Physics</i>	2013 – 2017

POSITIONS HELD

Drexel University <i>Graduate Research Assistant and CoAS Dean's Fellow</i> Department of Physics	2018 – Present
Sony Brook University and Brookhaven National Laboratory <i>Research Assistant</i> SBU Department of Physics & Astronomy and BNL Department of Physics	2015 – Present
Brookhaven National Laboratory <i>Intern</i> Department of Physics	2012 – 2013

AWARDS AND HONORS

<i>Sigma Xi Scientific Research Honor Society Member</i> , Drexel University	2019
<i>College of Arts and Sciences (CoAS) Dean's Fellowship</i> , Drexel University	2018
<i>Sigma Pi Sigma National Physics Honor Society Member</i> , Sony Brook University	2017
<i>Presidential Scholarship</i> , Sony Brook University	2013

RESEARCH HISTORY

2018 – Present	Gravitational Lensing Study of the second-order weak gravitational lensing effect known as Flexion.
2015 – Present	Low redshift 21 cm intensity mapping Cosmological parameter and modified gravity forecasts for a general 21 cm cosmology experiment, member of the DOE Cosmic Visions Dark Energy 21 cm Working Group, and design and construction of the radio telescope used for the 21 cm Baryon Mapping eXperiment at Brookhaven National Laboratory.

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| 2013 | Gravitational Waves
Proposed a new method for the indirect detection of gravitational waves via precision stellar redshift measurement. |
| 2012 | Modified Newtonian Dynamics
Investigated the plausibility of Modified Newtonian Dynamics on a local scale based on rotation curves of the Milky Way. |

Gravitational Waves

- 2012

Investigated the plausibility of Modified Newtonian Dynamics on a local scale based on rotation curves of the Milky Way.

PROFESSIONAL ACTIVITIES AND SERVICE

TEACHING

Teaching Assistant (Recitation and Lab Instructor)

PHYS 152, *Introductory Physics I*PHYS 154, *Introductory Physics III*

Winter 2020, Winter 2019

Spring 2019

Fall 2019, Fall 2018

Stony Brook University

Della Pietra High School Applied Math Program

CONFERENCES AND TALKS

Research talk to incoming graduate students, Drexel University

“Observation of gravitational waves through precision stellar redshift measurement”

16 Aug. 2013

Poster Presentations

11 Jun. 2019

“Dark matter and its alternatives”

27 Nov. 2012

PUBLICATIONS

- S., Foreman, S., Frisch, J., Green, D., Holder, G., Jacobs, D., Karagiannis, D., Kaurov, A. A., Knox, L., Kuhn, E., Liu, A., Ma, Y.-Z., Masui, K. W., McClintock, T., Moodley, K., Münchmeyer, M., Newburgh, L. B., Nomerotski, A., O'Connor, P., Obuljen, A., Padmanabhan, H., Parkinson, D., Perdureau, O., Rapetti, D., Saliwanchik, B., Sehgal, N., Shaw, J. R., Sheehy, C., Sheldon, E., Shirley, R., Silverstein, E., Slatyer, T., Slosar, A., Stankus, P., Stebbins, A., Timbie, P., Tucker, G. S., Tyndall, W., Villaescusa-Navarro, F., and Wulf, D., “*Research and Development for HI Intensity Mapping*”, ArXiv e-prints (2019) [[arXiv:1907.13090](#)]
1. Cosmic Visions 21 cm Collaboration, Ansari, R., **Arena, E. J.** , Bandura, K., Bull, P., Castorina, E., Chang, T.-C., Foreman, S., Frisch, J., Green, D., Karagiannis, D., Liu, A., Masui, K. W., Meerburg, P. D., Newburgh, L. B., Obuljen, A., O'Connor, P., Shaw, J. R., Sheehy, C., Slosar, A., Smith, K., Stankus, P., Stebbins, A., Timbie, P., Villaescusa-Navarro, F., and White, M., “*Inflation and Early Dark Energy with a Stage II Hydrogen Intensity Mapping experiment*”, ArXiv e-prints (2018) [[arXiv:1810.09572](#)]