

# EVAN J. ARENA

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## RESEARCH INTERESTS

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

## EDUCATION

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

## POSITIONS HELD

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

## AWARDS AND HONORS

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

## RESEARCH HISTORY

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2018 – Present	<b>Gravitational Lensing</b> Study of the second-order weak gravitational lensing effect known as Flexion.
2015 – Present	<b>Low redshift 21 cm intensity mapping</b> 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.
2013	<b>Gravitational Waves</b> 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.

## PROFESSIONAL ACTIVITIES AND SERVICE

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**Working Groups**     Member of the DOE Cosmic Visions Dark Energy 21 cm Working Group

**Collaborations**     Member of the Large Synoptic Survey Telescope Dark Energy Science Collaboration (LSST-DESC)

## TEACHING

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### Drexel University

*Teaching Assistant*

PHYS 100, *Preparation for Engineering Studies* (Recitation Instructor)     Winter 2019     PHYS 154,  
*Introductory Physics III* (Recitation and Lab Instructor)     Fall 2018

### Stony Brook University

*Lecturer*

Della Pietra High School Applied Math Program     Spring 2017

## TALKS AND PRESENTATIONS

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“Observation of gravitational waves through precision stellar redshift measurement”  
High School Research Program conference, Brookhaven National Laboratory     August 2013

“Dark Matter and its alternatives” (Poster)  
High School Research Program poster session, Brookhaven National Laboratory     September 2012

## PUBLICATIONS

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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](https://arxiv.org/abs/1810.09572)]