

# GABRIEL P. LYNCH

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## EDUCATION

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**The University of Chicago** 2014-2018  
Bachelor of Arts in Physics with Honors June 2018  
Bachelor of Arts in Mathematics June 2018  
**Thesis (Honors):** “A holographic look at topologically disconnected black hole remnants”  
*Advisor: Prof. Carlos Wagner*

## RESEARCH EXPERIENCE

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**Cosmological Physics and Advanced Computation Group** September 2018 - August 2019  
*Research Aide* Argonne National Laboratory

- Analyzed cosmological simulation output using parallelized code (MPI) on Argonne supercomputing resources, such as searching for dark matter deficient galaxies and tracking their histories.
- Studied the use of quantum sensors for the direct detection of ultra light dark matter.
- Performed tests on mock galaxy catalogs produced by the group for the LSST-DESC collaboration in order to improve the analysis pipeline.

**ATLAS Group** June 2016 - September 2016  
*Department of Energy SULI Intern* Argonne National Laboratory

- Analyzed and determined event selection criteria of simulated ATLAS detector data using the ROOT data analysis framework.
- Simulated particle collision data subject to various constraints using MadGraph5 and Pythia6.
- Wrote a project paper and presented research to others in the Argonne ATLAS group.

## TEACHING

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**Junior Tutor** October 2016 - June 2018  
*Department of Mathematics* University of Chicago

- Held tutorial sessions twice a week for students in introductory calculus classes in order to review and reiterate class lessons.
- Provided student feedback in the form of graded quizzes and problem sets.

## AWARDS AND HONORS

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**Black Hole Initiative essay winner** of third prize December 2018  
**Departmental Honors** for Undergraduate thesis in physics June 2018  
**Argonne Scholarship** with grant of \$53,000 per year 2014-2018  
**Dean’s List** for high academic achievement at the University of Chicago 2014-2016, 2017-2018

## PRESENTATIONS

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**“Black hole remnants and topology changes”** June 2018  
*Thesis presentation* University of Chicago  
**“Boosted Higgs and Top Yukawa Coupling”** September 2016  
*Internal group presentation* Argonne National Laboratory

## PROFESSIONAL MEMBERSHIPS

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Large Synoptic Survey Telescope - Dark Energy Science Collaboration (LSST-DESC)

## SELECTED COURSEWORK AND SKILLS

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### Physics

PHYS 364: General Relativity

PHYS 243: Advanced Quantum Mechanics

PHYS 250: Computational Physics

### Mathematics

MATH 263: Introduction to Algebraic Topology

MATH 274: Intro. to Differentiable Manifolds

**Computer Languages**      Python   C++   Fortran 77   Mathematica

**Computer Skills**      Distributed computing   MPI   Git   ROOT