

Zachary Bednarke

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EDUCATION

VANDERBILT UNIVERSITY

BACHELOR OF MUSIC

Expected Spring 2017 | Nashville, TN
Cum. GPA: 3.49/4.0

BA IN PHYSICS

Expected May 2017 | Nashville, TN
Honors Work in Progress
College of Arts and Sciences
Major GPA: 3.92 / 4.0

ARROWHEAD HIGH SCHOOL

Grad. June 2013 | Hartland, WI
Cum. GPA: 4.0/4.0

LINKS

LinkedIn:// zbednarke
VU Personal Website
Swyft Health

COURSEWORK

GRADUATE

Quantum Mechanics I
Quantum Mechanics II
Statistical Mechanics

UNDERGRADUATE

Classical Mechanics
Electricity/Magnetism/Electrodynamics I
Advanced Quantum Mechanics I
Advanced Quantum Mechanics II
Systems Biology
Electricity/Magnetism/Electrodynamics II

INDEPENDENT

Spring 2012: Calculus
Fall 2013: Differential Equations

Guided Studies

Differentiable Manifolds
—Fall 2015, with Prof **Bruce Hughes**
FLuids and Classical Field Theories
—Spring 2016, with Prof **Tom Kephart**

SKILLS

Tutoring:

Physics • Linear Algebra • Chemistry

Music:

Trumpet Lessons

Programming:

Python • C++ • Shell • \LaTeX

EXPERIENCE

SWYFT HEALTH | COFOUNDER

May 2015 – Present | Nashville, TN

- **Swyft Health** integrates point of care diagnostics with cloud technology with the goal of moving data from the field to the lab as fast as possible.
- I have pitched Swyft Health to leaders of the TN Dept. of Health and members of the VU Institute for Global Health.
- I work on back-end programming and overall development of Swyft Health.

SYBBURE | SEARLE UNDERGRADUATE RESEARCH PROGRAM

May 2014 - Present | Nashville, TN

- **SyBBURE** is a fully funded year-round research program embedded in VU's Systems Biology insitute **VIIBRE**.
- All students perform their research independently with guidance from faculty.
- **SyBBURE** organizes multidisciplinary programs in entrepreneurship, technology development, etc., to enrich students' exposure to the scientific world parallel to research.

RESEARCH

VU PARTICLE AND FIELD THEORY GROUP | THESIS RESEARCH

October 2015 - present | Nashville, TN

I work with **Prof Thomas Kephart** and **Prof Roman Buniy** on extending their generalization of the Beltrami equation to relativistic perfect fluids. I wrote down the Beltrami equation for Abelian fluids in General Relativity, and we will investigate non-Abelian fluids during the remainder of my time at Vanderbilt.

VU HIGH ENERGY PHYSICS GROUP | UNDERGRADUATE RESEARCHER

April 2015 – August 2015 | Nashville, TN

I performed research under the guidance of **Prof Alfredo Gurrola** and **VU JSWHEP** as a part of the CMS analysis effort during summer 2015. I worked on an analysis workflow for a $Z' \rightarrow \tau\tau$ search and participated in a week-long, on-site Fermilab Tau analysis workshop.

AWARDS

2015	SyBBURE	Best ThinkTank Project 2015, Swyft Health
2013	Vanderbilt	Dean's Honor Scholarship
2013	Vanderbilt	Academic Achievement Scholarship
2013	Vanderbilt	Del Sawyer Trumpet Scholarship
2013	Wisconsin	Wisconsin Academic Excellence Scholar
2013	National	National AP Scholar
2013	National	National Merit Scholar
2012	top 10/127	UW Full Tuition Music Scholarship Winner