

216 Harvest drive, Charlottesville VA

☎ 757-817-7204



✉ mrw3te@virgina.edu

📄 mathwalker.com

# Matthew Walker

## Education

- 2019–current **Graduate student**, *Univeristy of Virginia*, Charlottesville.  
Ph.d. Canidate
- 2016–2018 **University of Virginia**.  
*Charlottesville, Virginia, Graduated May 2018*  
Bachelors of Science in Physics
- 2014–2016 **Thomas Nelson Community College**.  
*Hampton, Virginia, Graduated 2016*  
Associates of Science with honors
- 2012–2013 **New Horizons Vocational and Trade School**.  
*Hampton, Virginia, Graduated 2013*  
Certification in welding with 800 hours of training. Stick, MIG, and Flux core

## Experience

### Research

- 2018 **Undergraduate Research Project, Condensed Matter Physics under Prof. Marija Vucela**.  
*University of Virginia, Charlottesville, Virginia, May 2018–Present*  
Anomalous thermal relaxation and the Mpemba effect of Langevin particles  
Use analytic methods to study whether an analogous to Mpemba effect exists in the Kramer's escape problem.  
Use computer simulations to model a physical system or as a heuristic tool to guide the analytics.
- 2018 **Undergraduate Research Project, Experimental High Energy Physics under Prof. Brad Cox**.  
*University of Virginia, Charlottesville, Virginia, Beginning spring 2018*  
CMS Electromagnetic calorimeter upgrade  
Work in the lab with testing "trigger towers", timing detectors, ie components of the EM detector that have to be upgraded.
- 2017–2018 **Undergraduate Research Project, Condensed Matter Physics under Prof. Jeffrey Teo**.  
*University of Virginia, Charlottesville, Virginia, April 2017–May 2018*  
Use analytical methods and Mathematica to study electronic properties of bi-layer graphene.  
Study band structure of graphene using Perturbation theory and Time-independent Schrodinger's eq. to prove the existence of chiral channels in bi-layer graphene.

### Teaching

- 2019–2021 **Graduate teaching assistant under Prof. Maksim Bychkov**.  
*University of Virginia, Charlottesville, Virginia, August 2019–May 2021*  
Teaching the intro lab courses to engineers.  
Teach 4 sections of a 1 credit lab a week  
Hold office hours each week

## Volunteering

- 2016-2018 **Madison House**, Adopt a Grandparent Program.  
*Charlottesville, Virginia*  
Develop relationship with a senior citizen through conversations and card games once/twice a week.
- 2014-2016 **Virginia Institute of Marine Science**.  
*Gloucester, Virginia*  
Helped graduate students with research in the field/lab  
Organized the fish sample collection

## Awards

- 2017 **2nd place award for presentation at Sigma Pi Sigma research symposium**.  
*October 2017*  
Awarded 2nd place for oral research presentation on bi-layer graphene

## Extra Curricular

- 2019 **Oral presentation at March Meeting 2019**.  
*March 2019*  
gave an oral presentation on the anomalous thermal relaxation and the Mpemba effect.
- 2018 **Member of Board of Trustees for Bridge Builder Scholarship**.  
*November 2018*  
Selected to help award a extensive scholarship for academic excellence at Stonewall Jackson Highschool in Quicksburg, VA.
- 2017-2018 **Secretary and webmaster of Society of Physics Students at UVA**.  
*Charlottesville, Virginia, August 2017-May 2018*  
Designed and built the current website.  
I managed the website for the UVA chapter of SPS, wrote emails every week, and helped plan events for the semester.
- 2018 **Poster presentation at March Meeting 2018**.  
*March 2018*  
Presented a poster during the undergraduate poster session on bi-layer graphene

## Computer skills

- C/C++, Python, Mathematica, and ROOT

## Relevant Courses

- Electricity and Magnetism 1 and 2, Quantum Mechanics 1 and 2, Intermediate Lab, Computational Physics, Statistical Physics, Differential Geometry, Differential Topology, Algebraic Topology, General Relativity, and Classical Mechanics.

## References

Marija Vucelja, Assistant Professor, Department of Physics, mv8h@virginia.edu  
Maksim Bychkov, Professor, Department of Physics, ct5wa@virginia.edu