

# MATTHEW J. KUKLA

<https://mkukla.net>  $\diamond$  [mkukla1@umd.edu](mailto:mkukla1@umd.edu)

## EDUCATION

---

### University of Maryland

*Mathematics, BSc.*

awarded May 2022

*College Park, Maryland, USA*

- Selected for First-Year Innovation and Research Experience (FIRE)

## PROFESSIONAL EXPERIENCE

---

### BlueHalo Labs

*Research Engineer*

June 2022 - present

*Rockville, Maryland, USA*

- Researcher in applied mathematics, graph theory, formal logic.
  - Focused on applications to automated reasoning, scientific computing, lexical semantics
  - Designed, implemented, and deployed novel graph clustering algorithms
- Write technical reports for delivery to private sector and government customers

### The Math Citadel

*Researcher*

March 2019 - present

- Conduct research in fuzzy algebra, measure theory
- Develop software packages
- Contribute to technical articles, professional lectures, and notes

### Patton Electronics

*Software Engineering Intern*

Summer 2016

*Gaithersburg, Maryland, USA*

- Developed a Linux-based operating system for VDSL router prototypes
  - Wrote, patched hardware-specific kernel modules

## SKILLS

---

### Programming Languages

C, OCaml, Python, Fortran, Julia, Prolog, Java, MATLAB

### Operating Systems

Linux, UNIX (BSD and Solaris), MS-DOS

### Tools, Libraries

Shell scripting, sed/AWK, Git,  $\text{\LaTeX}$ , NumPy, SciPy, BLAS

### Web

HTML, CSS, Gopher, OpenSearch

## PUBLICATIONS AND PREPRINTS

---

### Logical Limit Laws for Layered Permutations and Related Structures

*Joint with Samuel Braunfeld.*

*Published, Enumerative Combinatorics and Applications. 2 no. 4. (2021)*

### Colored Convex Linear Orders and Logical Limit Laws

*Preprint. (2021)*

### Rings of Typed Ordered Fuzzy Numbers

*Joint with Rachel Traylor.*

*Preprint, arXiv:2010.07764. (2020)*

## SELECTED TALKS

---

### **Double Factorization Systems and Double Fibrations**

*7th International Conference on Applied Category Theory (2024)*

### **Double Categorical Limits**

*The Adjoint School (2024)*

### **Logical Limit Laws for Layered Permutations and Related Structures**

*University of Maryland Logic Seminar (2022)*

### **Categorical Mirror Symmetry of Elliptic Curves (two lecture series)**

*University of Maryland Geometry and Physics Seminar (2018)*

### **Generalized Calabi-Yau Manifolds**

*University of Maryland Geometry and Physics Seminar (2018)*

## CONFERENCES

---

### **6th International Conference on Applied Category Theory**

*University of Maryland (August 2023)*

### **University of Maryland Geometry Festival**

*University of Maryland (May 2019)*

### **Witt Vectors, Deformations, and Absolute Geometry**

*University of Vermont (June 2018)*