

About the Journal

Aim and Scope. The primary goal of the *Columbia Journal of Undergraduate Mathematics* is to provide undergraduate readers with high-quality, accessible articles on challenging topics, or novel approaches to teaching more familiar concepts. Articles published are purely expository; we do not accept research papers. The articles are under 20 pages in length, with the primary exceptions being senior theses written by students at Columbia and other universities alike. The journal also accepts and publishes mathematical artwork with clear pedagogical value.

About This Issue. This issue is purely expository with three works submitted from authors unaffiliated with our journal, and one work written by a staff writer and previous editor of the journal. We hope to build out our staff writing team and provide support for undergrads looking to write and publish expository work.

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Letter from the Editors

Our second general issue of the *Columbia Journal of Undergraduate Mathematics* is radically different than our first. While our first issue was predominantly topological and representation-theoretic, this issue focuses on algorithms and combinatorics (although geometric and visual intuition still abound)! Additionally, the articles in this issue are largely pitched at a more general audience than our first. The variety between the first two issues demonstrate the importance of publishing undergraduate expository work: not only is it often more accessible, and offers unique perspectives and intuition, but because undergraduates have generally not chosen a research field yet, their interests are wider and ever-evolving. We, the editors, have never known what to expect in the submission pool each year, and we select the articles in each issue to provide our readers with the same surprise and exposure to novel areas.

We would especially like to highlight “Exploring Parking Functions: Poset and Polytope Perspectives” which explores intuitive combinatorial problems and their solutions using a combination of classical combinatorics and visual/geometric intuitions. The editors particularly enjoyed this article for its figures and for the elegant story it tells, weaving together parking functions and partitions. Beyond that, “Elliptic Curve Cryptography: Secure Digital Communication” combines the algebraic structure of a classical variety with an exposition with the often-mentioned, rarely elaborated upon applications of elliptic curves to cybersecurity. Finally, “Multiplicative Weights: An Elegant Application to Maximum Flow” is our first true applied mathematics piece, using intuition and heuristics to demonstrate a wide variety of applications of the theory of multiplicative weights, from economics to physics.

In addition to these three articles, this issue features our first staff-written piece. We wanted to introduce staff-written pieces to have a chance to introduce our readers to certain ideas and topics we may not get a submission about. Further, we want our staff written pieces to be of a different flavor than our typical pieces; this first one offers a new perspective on a familiar concept, rather than expositing a new topic. We hope our readers are able to learn from Emory Sun’s perspective “Demystifying Compactness,” and we look forward to publishing pieces from our staff in the future.

Finally, we want to highlight our wonderful team of content editors, copy editors, and graduate student editors for all the time and effort they have put into making this first issue. We would also like to acknowledge the support from the Columbia Libraries and Department of Mathematics, who were the technical and financial backbone to make this project come to life.

Sincerely,

Zachary Lihn, Lisa Faulkner Valiente, Elizabeth Frost, and Jon Kwong

Masthead

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