

A Word from the Editor

The editorial board of the *Mathematics Exchange* is pleased to present this latest issue, a collection of four enjoyable articles addressing a range of mathematical topics of interest to a broad audience at the undergraduate level. We certainly appreciate the authors' efforts to share their new discoveries as well as appreciate how they inspire and motivate our readership to follow their example in sharing their love for mathematics. We believe that getting students involved in publishing mathematics is a true milestone in helping them find their (permanent) place in the mathematical community and we are thrilled to be a part of that endeavor.

The first article concerns graph theory, specifically k -biranking, a generalization of a k -ranking of a graph. The authors compute the birank numbers for $3 \times n$ grid graphs for certain small values of n , while also providing both upper and lower bounds for all n .

The second article grew out of an honors capstone project. It provides an analysis of carbon dioxide levels measured at the Mauna Loa Observatory in Hawaii, and then discusses the potential impact on the climate.

Article three explores new details about permutations with exactly one increasing subsequence of length three. The team of authors examines some special cases of these permutations and states a related conjecture. Further, a corollary to their work produces a known result previously proved only with generating functions.

The final article investigates group-based discrete moving frames for polygons in Galilean and Lorentzian geometries for one, two, and three spatial dimensions. Finding a generating set of independent invariants associated to polygons in these geometries, the authors show that the discrete moving frames and the invariants in Lorentzian geometry approach those in Galilean geometry as the speed of light approaches infinity.

We hope that you will enjoy reading this issue of the *Mathematics Exchange* and, as always, we welcome and encourage ideas on how we can better serve our readers.

Rich Stankewitz