

## Laura Anderson (Binghamton)

---

### Positroids? Did you say "Positroids"?

---

#### Abstract for the Combinatorics Seminar 2014 March 25

---



Well, actually, Alex Postnikov said “positroid” – don't blame me. These are matroids on  $[n]$  which can be realized over  $\mathbf{R}$  by a matrix with all maximal minors nonnegative. They arise in the study of the totally nonnegative part of the Grassmannian, which in turn arises in applications in physics.

Closely related are *positively oriented matroids*. A positively oriented matroid is an oriented matroid of rank  $d$  on  $[n]$  which, up to reorientation, has a chirotope which is nonnegative on all increasing  $d$ -tuples. Thus a positroid could also be defined as the underlying matroid of a realizable positively oriented matroid.

I'll present a recent result of Ardila, Rincón, and Williams: *all positively oriented matroids are realizable*. Together with earlier work of da Silva, this leads to a simple combinatorial characterization of positroids. The proof makes elegant use of matroid basis polytopes.

---

From:

<https://www2.math.binghamton.edu/> - **Binghamton University Department of Mathematics and Statistics**

Permanent link:

**<https://www2.math.binghamton.edu/p/seminars/comb/abstract.201403and>**

Last update: **2020/01/29 19:03**

