Lattice paths, linear algebra and combinatorics
Day 3

Carolina Benedetti Velásquez

with Jerónimo Valencia

Mathematics Sin Fronteras
November 11th, 2021
Last time: posets

\[ g \preceq h \iff \text{every circuit of } h \text{ is a union of circuits in } g \text{ and } r(g) + 1 = r(h). \]
Last time: posets

\( g \preceq h \iff \) every circuit of \( h \) is a union of circuits in \( g \) and \( r(g) + 1 = r(h) \).
Today: poset of LPMs
A matroid $N$ is a **quotient** of a matroid $M$ if every circuit of $M$ is a union of circuits of $N$. 

Is there a "more combinatorial" way to understand quotients for other families of matroids?
A matroid $N$ is a quotient of a matroid $M$ if every circuit of $M$ is a union of circuits of $N$.

Is there a “more combinatorial” way to understand quotients for other families of matroids?
Quotients of LPMs in [3]
An example in [17]
Poset of quotients of LPMs: open questions

- What is the Möbius function of this poset?
- How many saturated chains does it have?
Poset of quotients of LPMs: open questions

- What is the Möbius function of this poset?
- How many saturated chains does it have?
- How do these flags look geometrically?
Poset of quotients of LPMs: open questions

- What is the Möbius function of this poset?
- How many saturated chains does it have?
- How do these flags look geometrically?

¡Muchas gracias!