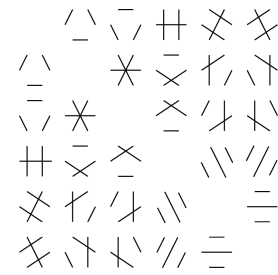


# Mathematics Seminar



## Rocky Mountain Algebraic Combinatorics Seminar

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### A crystal-like structure on shifted tableaux

Maria Monks Gillespie  
University of California, Davis

We establish a crystal-like structure on shifted tableaux, whose characters are the Schur  $Q$ -functions. In particular, we will define two sets of coplactic raising and lowering operators  $E, F, E',$  and  $F'$  on shifted tableaux that each independently give a type  $A$  Kashiwara crystal. Taken together, these operators detect highest weight skew shifted tableaux, giving a new shifted Littlewood-Richardson rule. We also give local axioms that characterize these "doubled crystals", analogous to Stembridge's axioms for ordinary tableaux crystals.

If time permits, we will discuss some applications of these operators to understanding real Schubert curves in the orthogonal Grassmannian. This is joint work with Jake Levinson and Kevin Purbhoo.

### Heisenberg categorification

Alistair Savage  
University of Ottawa

The Heisenberg algebra plays a vital role in many areas of mathematics and physics. In this talk, we will give an overview of current research into its categorification. In particular, we will explain how certain monoidal categories, consisting of planar diagrams, have Grothendieck rings isomorphic to the Heisenberg algebra. These categories act naturally on categories of modules over algebras related to affine Hecke algebras and their degenerate analogues. In this way, Heisenberg categorification gives us new topological and categorical tools to approach the representation theory of these Hecke-type algebras.

Weber 223  
4–6 pm  
Friday, Apr 20, 2018  
(Refreshments in Weber 117, 3:30–4 pm)  
Colorado State University

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This is a joint Denver U / UC Boulder / UC Denver / U of Wyoming / CSU seminar that meets biweekly.  
Anyone interested is welcome to join us at a local restaurant for dinner after the talks.



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