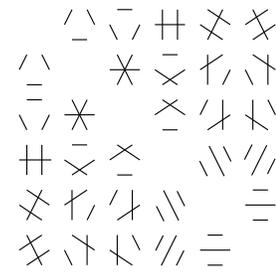


# Mathematics Seminar



## Rocky Mountain Algebra&Combinatorics Seminar

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### Intersecting two group theory problems

Peter Brooksbank  
Bucknell U.

This ambiguously titled talk introduces two rather different problems involving groups. The first, which has its origins in discrete geometry, is to identify so-called *C-groups*, and does actually involve intersecting some groups! The second concerns the generation of “random” elements in groups using a technique widely known as the product replacement algorithm. The point of the talk, however, is to motivate a third problem involving groups – the titular “intersecting problem” – whose solution has implications for the other two problems. This third problem concerns the identification within a given group of “irredundant” sets of generators that are as large as possible.

### On irredundant generating sets for transitive groups

Peter Brooksbank  
Bucknell U.

As the name suggests, a generating set  $X$  for a group  $G$  is irredundant if no proper subset of  $X$  generates  $G$ . The largest size of an irredundant generating set for  $G$  is denoted  $m(G)$ . Beyond the range of exhaustive computation, the precise value of  $m(G)$  is only known for very familiar group families such as the symmetric and alternating groups. In this talk I will report on joint work with Maria Elisa Fernandes, Dimitri Leemans, Scott Harper, and Colva Roney-Dougal whose goal is to establish good upper bounds on  $m(G)$  for all transitive permutation groups.

Weber 223  
4–6 pm, Friday, October 24, 2025  
(Refreshments 3:30–4 pm)  
Colorado State University  
4 pm, Friday, October 24, 2025

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This is a joint Denver U / CU Boulder / 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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