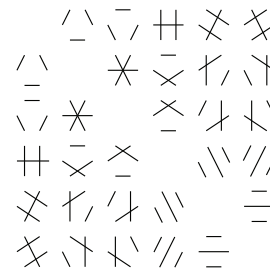


# Mathematics Seminar



## Rocky Mountain Algebraic Combinatorics Seminar

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### The Benson-Solomon fusion systems

Justin Lynd  
University of Louisiana at Lafayette

The fusion system of a finite group  $G$  at a prime  $p$  is a category whose objects are the subgroups of a fixed Sylow  $p$ -subgroup of  $G$ , and where the morphisms are the conjugation homomorphisms between the subgroups induced by the elements of  $G$ . The notion of a saturated fusion system is abstracted from this standard example. Once the group is abstracted away, there appear many exotic fusion systems not arising in the above fashion. Such exotic fusion systems are prevalent when  $p$  is odd, but only a single one-parameter family of “simple” exotic fusion systems at the prime 2 are currently known. These are closely related to the groups  $Spin_7(q)$ ,  $q$  odd, and were first considered by Solomon and Benson, although not as fusion systems per se.

In the first half of the talk, I shall provide some background on fusion systems and explain some coincidences that allow the Benson-Solomon systems  $Sol(q)$  to exist. In the second half, I’ll discuss various results about these systems which hit around the following questions: How close to a group is  $Sol(q)$ ? Are there any more exotic systems constructed in some direct fashion from the existence of  $Sol(q)$ ? How many 2-modular simple modules would the principal 2-block of  $Sol(q)$  have if it were a group? In various combinations, this is joint work with E. Henke, A. Libman, and J. Semeraro.

Online via Zoom

<https://zoom.us/j/95321487441?pwd=T1p4VG9pejZCekJmeDFFB1BzeWpsdz09>, Meeting ID: 953 2148 7441, Passcode: 722523

4 pm, Friday, February 26, 2020

Talk part 1, 4.10-4.40,

Break 4.40-5.10 at <https://gather.town/HQmdvgyabpEL4qpB/RMAC>,

Talk part 2 5:10-5:40

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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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