1125-20-2038   **Catherine A. Buell*** (`cbuell1@fitchburgstate.edu`), **Aloysius Helminck**, **Vicky Kilma**, **Jennifer Schaefer**, **Carmen Wright** and **Ellen Ziliak**. *Orbit decomposition of the generalized symmetric spaces of $SL_2(F_q)$.* Preliminary report.

The talk will discuss the decomposition of the double-coset space $H_k \backslash G_k / H_k$ for $G = SL_2(k)$ and H the fixed-point group of an involution θ of G with k any finite field. This decomposition, which plays a role in representation theory, is central in the study of symmetric spaces and their generalizations. Computing, characterizing, and eventually generalizing the H_k-orbits of the individual elements and the maximal tori of G_k / H_k will ultimately classify the double cosets of various subgroup actions (like parabolic or Borel) on the generalized symmetric space. This decomposition which has been highly studied over the real numbers and algebraically closed fields but with little known for finite fields. We will establish which conventions hold or fail over finite fields. (Received September 19, 2016)

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