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Vicky W Klima* (klimavw@appstate.edu). *Generalized Symmetric Spaces of $SL(2)$ over Finite Fields.*

Symmetric spaces play a key role in many fields of active research such as Lie theory, differential geometry, and harmonic analysis. More recently, generalized symmetric spaces have become of interest in representation theory. Any involution of an algebraic group gives rise to both a generalized and extended symmetric space for that group. For the special linear group with real entries, the generalized symmetric space consists of the symmetric positive definite matrices while the extended symmetric space contains all symmetric matrices. In general, the extended symmetric space contains the generalized symmetric space and typically this containment is proper. We will show that in the case of $SL(2)$ with entries in a finite field of characteristic not equal to two, this typical behavior does not hold; the generalized and extended symmetric spaces are equal independent of the choice of involution. The talk will end with a discussion of undergraduate investigations into the structure of the extended symmetric space for the symmetric group via poset diagrams. (Received August 28, 2014)