

1095-22-85

**Mark Colarusso\***, colarus@uwm.edu, and **Sam Evens**. *Eigenvalue Coincidences and  $K$ -orbits on the flag variety.*

This talk is based on joint work with Sam Evens which relates the Gelfand-Zeitlin integrable system on  $gl(n, C)$  to orbits of  $K = GL(n-1, C) \times GL(1, C)$  on the flag variety of  $gl(n, C)$ . For an  $n$  by  $n$  matrix  $x \in gl(n, C)$ , let  $x_{n-1}$  be the  $n-1$  by  $n-1$  matrix in the upper left corner of  $x$ . We study the variety  $X(j)$  consisting of matrices  $x$  such that  $x$  and  $x_{n-1}$  share at least  $j$  eigenvalues in common counting repetitions. We show that  $X(j)$  is an equidimensional variety of codimension  $j$ . The irreducible components of  $X(j)$  are given by the  $K$ -saturation of Borel subalgebras which generate  $K$ -orbits of codimension  $j$  in the flag variety of  $gl(n, C)$ . (Received August 30, 2013)