THE UNIVERSITY   **OF HONG KONG**

Institute of Mathematical Research
Department of Mathematics

Seminar

Orbits in the affine flag variety of type A

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Abstract

It is a classical result that the set $K\backslash G/B$ is finite, where G is a reductive algebraic group over an algebraically closed field with characteristic not equal to two, B is a Borel subgroup of G, and $K = G^\theta$ is the fixed point subgroup of an involution of G. In this talk, we first survey the classical result. Then we investigate the affine counterpart of the aforementioned set, where G is the general linear group over formal Laurent series, B is an Iwahori subgroup of G, and K is either the orthogonal group, the symplectic group or product group over formal Laurent series. We construct explicit bijections between the double cosets $K\backslash G/B$ and certain twisted affine involutions or affine (p, q)-clans, which are affine involutions with plus or minus signs assigned to the fixed-points. This is the first combinatorial description of K-orbits in the affine flag variety of type A. At the end we will explore some future directions of these results, including possible relations between the combinatorial weak order of the orbit representatives and the closure of the orbits.

Date:	November 27, 2024 (Wednesday)
Time:	1:00 – 2:00 pm
Venue:	Rm LG-106, K.K. Leung Building, HKU

All are welcome