

**COLLOQUIUM**  
**UNIVERSITY OF PITTSBURGH**  
**THURSDAY, JANUARY 14, 2016**

704 THACKERAY HALL  
3:00 P.M.

**TSAO-HSIEN CHEN**  
**DEPARTMENT OF MATHEMATICS**  
**NORTHWESTERN UNIVERSITY**

**HYPERELLIPTIC CURVES & SPRINGER THEORY**

**ABSTRACT:** Springer theory relates nilpotent orbits in the Lie algebra of a connected reductive group to irreducible representations of the Weyl group. It is a classical piece of representation theory on which much other theory is built. I will give an introduction to Springer theory and then consider a generalization of the theory where we replace Lie algebras by symmetric spaces. In this new setting various new phenomena occur which are not present in the classical Springer theory. For example, we obtain representations of the braid group on cohomology of families of varieties rather than just Weyl group representations. Interestingly, varieties appearing in this new setting are closely related to hyperelliptic curves. This talk is based on a joint project with Kari Vilonen and Ting Xue.

**Refreshments served at 2:30 p.m.**  
**in the Math Dept. COMMON ROOM, Thackeray 705**

\*The speaker is a candidate for a position in the Department.