UNIVERSITY AT ALBANY
State University of New York

College of Arts and Sciences
Department of Mathematics and Statistics

Colloquium

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Positively Multiplicative Graphs and Affine Grassmannian Elements

Friday, October 31, 2025
3:00 p.m. HU-124
(tea & coffee at 2:40 p.m.)

Abstract. Positively multiplicative graphs form a particular class of directed graphs whose positive harmonic functions can be quite easily described. They emerge naturally in the study of some natural random walks defined on classical combinatorial objects like partitions or alcoves tilings. The case of alcoves tilings restricted to the dominant Weyl chamber of a finite root system is particularly interesting since the underlying walks correspond to the so called affine Grassmanniann elements of affine Weyl groups. The corresponding multiplicative graphs can then be regarded as combinatorial skeletons of their associated homology rings. We will present an introduction to these notions and see how they permit to solve interesting problems at the crossroad between combinatorics, algebra and probability. This is a joint work with J. Guilhot (IDP-Tours) et P. Tarrago (LPSM-Paris).