

Geometry, Groups and Dynamics/GEAR Seminar
(held at the Illinois hub of GEAR)

12:00 pm, Tuesday, January 29, 2019, 243 Altgeld Hall

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The Farey Sequence Next-Term Algorithm, and the Boca-Cobeli-Zaharescu Map Analogue for Hecke Triangle Groups G_q

Abstract: The Farey sequence is a famous enumeration of the rationals that permeates number theory. In the early 2000s, F. Boca, C. Cobeli, and A. Zaharescu encoded a surprisingly simple algorithm for generating--in increasing order--the elements of each level of the Farey sequence as what grew to be known as the BCZ map, and demonstrated how that map can be used to study the statistics of subsets of the Farey fractions. In this talk, we present a generalization of the BCZ map to all Hecke triangle groups G_q , $q \geq 3$, with the $G_3 = \text{SL}(2, \mathbb{Z})$ case being the "classical" BCZ map. If time permits, we will present some applications of the G_q -BCZ maps to the statistics of the discrete G_q linear orbits in the plane \mathbb{R}^2 (i.e. the discrete sets $\Lambda_q = G_q(1, 0)^T$).