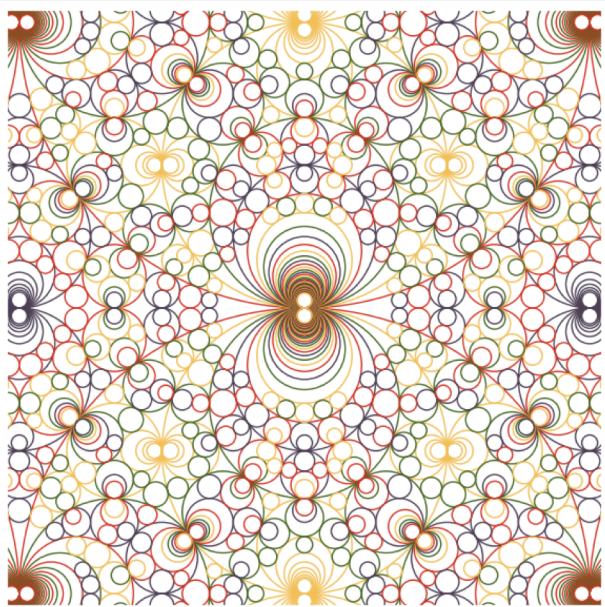


UCCS Department of Mathematics

Math Colloquium Series

DR. KATHERINE STANGE
UNIVERSITY OF COLORADO AT BOULDER



DATE:

SEPTEMBER 20, 2018

TIME:

12:30PM-1:30PM

(REFRESHMENTS AT 12:15PM)

LOCATION:

UNIVERSITY CENTER
ROOM #124

From Farey Sequences to Apollonian Circle Packings

Abstract: I will begin with the familiar Farey sequences: the subdivisions of the real line obtained by recursively taking the mediant $(a+c)/(b+d)$ of fractions a/b and c/d . I will take this starting point as an excuse for an eclectic tour of the visual side of number theory. Trees, tessellations, trajectories and circle packings will be our guide to such topics as continued fractions, topographs, hyperbolic geometry, ergodic theory, and even Apollonian circle packings. Motivated in this way, I'll discuss the arithmetic of imaginary quadratic fields K and their rings of integers O_K . Via the dynamics of $PSL(2, O_K)$, one can visualize the arithmetic of the field, especially its Diophantine approximation properties. The central picture is the orbit of the extended real line under this matrix group of Mobius transformations in the complex plane. Various striking visual aspects of the resulting arrangement of circles reflect number theoretic properties of the field.

For More Information please contact the UCCS Math Department at
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