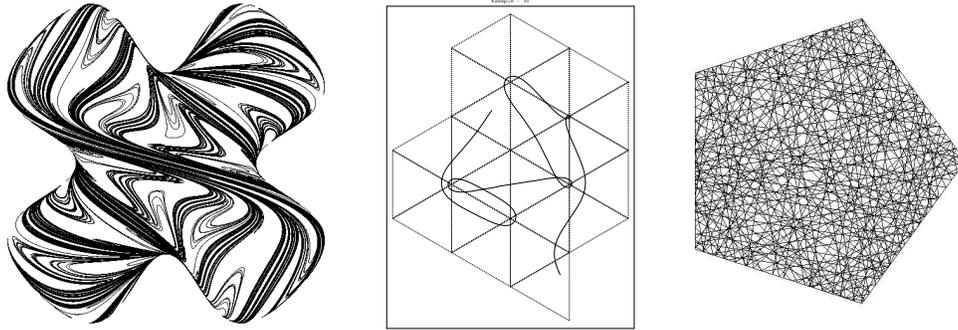


# Dynamics and Algebraic Surfaces



I. Islands on K3 surfaces

II. Random lattices and  $\sqrt{n} \bmod 1$

III. Billiards

Simple dynamical systems can exhibit a rich and rigid structure whose analysis leads in surprising directions. These talks will present 3 examples of this phenomenon in which algebraic surfaces come into play.

To begin, we will show that the first interesting dynamical systems live on algebraic surfaces, and use Hodge theory and Salem numbers to study their behavior.

We will then investigate the strange statistics of  $\sqrt{n} \bmod 1$  via hyperbolic geometry and the universal elliptic curve.

Finally we will relate Abelian varieties and Hilbert modular surfaces to billiards on L-shaped tables.

All three talks will be accessible to a general audience, and none is a prerequisite for any other.

CURTIS T. McMULLEN  
HARVARD UNIVERSITY