

MICHAEL HOCHMAN
INTERACTIONS BETWEEN ERGODIC THEORY AND FRACTAL
GEOMETRY

Weeks 2-3: 4-16 July, 5 double lectures (each lecture is 45-50 minutes).

Abstract: This course will focus on some problems on the border between number theory, ergodic theory and fractal geometry, involving distribution of digits of real numbers and diophantine approximation. These include the times-2, times-3 conjecture of Furstenberg, and some other less well-known conjectures, also due to Furstenberg, which concern the size (in terms of Hausdorff dimension) of the orbit closures of points under commuting, expanding maps such as times-2, times-3, and intersections and sums of such orbit closures. We will discuss these conjectures and their variants in some detail (there will be only very mild overlap with other courses in the program). We will take the geometric viewpoint for many of these problems and discuss some of the connections between them and other problems in fractal geometry.