1139-37-576 **Florian Karl Richter*** (`richter.109@osu.edu`). *The dichotomy between structure and randomness in multiplicative number theory.*

We will begin the talk by discussing a dichotomy theorem in multiplicative number theory which asserts that any multiplicative function (that satisfies certain minor regularity conditions) is either an almost periodic function or a pseudo-random function. Then we will explore how this phenomenon extends to other classical objects in number theory. In particular, we will discuss the combinatorial and dynamical properties of level sets of multiplicative functions which includes a structure theorem that allows us to derive new results in ergodic theory and in additive combinatorics. (Received February 19, 2018)