DISTRIBUTION OF SEQUENCES IN NUMBER THEORY

ALEXANDRU ZAHARESCU

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The topic has an established history, starting with the distribution of prime numbers and continuing with the study of a large variety of sequences which appear naturally in problems in number theory. Several developments in this area occurred in recent years. In this course we will study some of these results, starting with a review of the theory of uniform distribution of sequences and moving to the finer structure of the distribution of a sequence captured by the level spacing measures and correlation measures. We then proceed to a detailed presentation in various contexts, such as distribution in finite fields, fractional parts of polynomial sequences, Farey fractions, visible points, Ford circles, distribution of zeros of the Riemann zeta-function and more general L-functions.

We will not follow any particular textbook. Instead, we will present material from various papers. There will be no exams. Some homework problems may be assigned. In addition, students enrolled in this class will be expected to give a couple of lectures on topics related to the content of the course.

Office: 449 Altgeld Hall
Email: zaharesc@illinois.edu