ARISTOTLE UNIVERSITY OF THESSALONIKI

Department of Mathematics
Division of Mathematical Analysis

Seminar of the Division of Mathematical Analysis

Many mysteries of the Ulam sequence

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Abstract: In 1964, Stanisław Ulam defined the following sequence of numbers. Start with 1 and 2, and then take each next term to be the smallest integer larger than previous terms which can be written as a sum of two distinct previous terms in a unique way. Proceeding this way, we obtain an infinite sequence of numbers

$$1, 2, 3, 4, 6, 8, 11, 13, 16, 18, 26, 28, 36, 38, 47, \ldots$$

Despite its simple definition, Ulam sequence has successfully resisted any attempts at rigorously proving anything about its structure. Does it have positive density? Probably, but we do not know how to prove it. Does it contain infinitely many even numbers? Almost certainly - but no one has shown this rigorously. By contrast, experimental investigations hint at astoundingly rich structure of the sequence. In this talk, I will present what we know and conjecture about the behaviour of this and related integer sequences.

Day, Tuesday 25 April 2023, 19:00 - 20:00
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