

QUASIPERIODIC SUMS AND PRODUCTS

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Quasiperiodic Sums (Birkhoff Sums over a rotation) and Products arise in many areas of mathematics including the study of Strange Non-Chaotic Attractors, Critical KAM Theory, Quantum Chaos, q -series, Partition Theory, and Diophantine Approximation.

The graphs of these functions form intriguing geometrically strange and self-similar structures. They are easy and rewarding to investigate numerically, and suggest many avenues for investigation. However they prove resistant to rigorous analysis.

In this talk we will survey some of the most important examples, and focus on the most heavily studied example, Sudler's product of sines. We will also report on new approaches which allow us to settle negatively an open question of Erdős & Szekeres from 1959, and to prove a number of experimental results reported recently by Knill & Tangerman (2011).