Title: Generalizations of Furstenberg's $\times 2 \times 3$ Theorem.

Abstract: Furstenberg's $\times 2 \times 3$ theorem asserts that certain special 2-parameter sequences of real numbers are dense modulo 1. I present a survey of some other results regarding the density modulo 1 of some multi-parameter sequences, and also provide the following new results (joint work with D. Berend): Given a pair of multiplicatively independent integers a, b, an irrational α, a positive integer d and a polynomial p with at least one irrational coefficient apart from the free term, the sets $\{\binom{m+n}{d} a^m b^n \alpha \mid m, n \in \mathbb{N}\}$ and $\{p(m) a^m b^n : m, n \in \mathbb{N}\}$ are dense modulo 1.