

Title: Periodicity of joint co-tiles in \mathbb{Z}^d

Abstract: The periodic tiling conjecture in \mathbb{Z}^d asserts that if a tile (=finite set) tiles \mathbb{Z}^d , then it must also tile it periodically. In dimension $d = 1$, an old theorem of Newman shows an even stronger assertion, which is that every tiling of \mathbb{Z} is itself periodic. Recently, Greenfeld and Tao showed that the periodic tiling conjecture is false in large enough dimension d . On the other hand, Bhattacharya proved for $d = 2$ that the periodic tiling conjecture is true. In this talk, after giving all the definitions and background, I'll explain how (in spite of Greenfeld-Tao counterexample) both Newman's and Bhattacharya's theorems can be extended to any dimension d , with a slightly different statement and setup. This talk is based on a joint work with Tom Meyerovitch and Shrey Sanadhya.