Can you tile the space better than trivial?

Chuanming Zong

Tianjin University

cmzong@tju.edu.cn

Tiling is an ancient subject in mathematics. It has many fascinating stories, impressive results, and challenging problems. Recent years, several surprising discoveries have been achieved: C. Mann, J. McLoud-Mann, D. Von Derau and M. Rao's works on pentagon tiles, R. Greenfeld and T. Tao's work on aperiodic tiling, and our group's works on multiple tiling. We will introduce some of these results.

In 1980, Grünbaum and Shephard wrote about the tiling problems: "*Current fashions in mathematics applaud abstraction for its own sake, regarding it as the highest intellectual activity - whether or not it is, in any sense, useful or related to other endeavors. Mathematicians frequently regard it as demeaning to work on problems related to elementary geometry in Euclidean space of two or three dimensions. In fact, we believe that many are unable, both by inclination and training, to make meaningful contributions to this more concrete type of mathematics; yet it is precisely these and similar considerations that include the results and techniques needed by workers in other disciplines.*"