

In this thesis we consider an open question of Feige that asks whether there always exists a constantly Lipschitz bijection of an n^2 -point subset of \mathbb{Z}^2 onto a regular grid $[n] \times [n]$ for every $n \in \mathbb{N}$. We relate this question to an already resolved problem of the existence of a bounded positive measurable density in \mathbb{R}^2 that is not the Jacobian of any bilipschitz map. This problem was resolved by Burago and Kleiner [1], and independently, by McMullen [12]. We present the work of Burago and Kleiner, analyze its relation to Feige's problem and suggest a continuous formulation of Feige's question in a special case. Then we present the Burago–Kleiner density, make several observations about the properties of this density, and after that we construct a density that is everywhere nonrealizable as the Jacobian of a bilipschitz map. Subsequently, we discuss our continuous variant of Feige's question, provide several observations concerning it, and finally, we try to use the everywhere nonrealizable density constructed before to answer our continuous variant of Feige's question. However, this last task still remains incomplete.