Absztrakt: In this paper, we study a two-dimensional knapsack problem: packing squares as many as possible into a unit square. Our results are the following:
(i) we propose an algorithm called IHS (Increasing Height Shelf), and prove that the packing is optimal if in an optimal packing there are at most 5 squares, and this upper bound is sharp;
(ii) if all the squares have side length at most 1/k, we propose a simple and fast algorithm with an approximation ratio \( \frac{k^2+3k+2}{k^2} \) in time \( O(n \log n) \);
(iii) we give an EPTAS for the problem, where the previous result in Jansen and Solis-Oba (2008) [16] is a PTAS, not an EPTAS. However our approach does not work on the previous model of Jansen and Solis-Oba (2008) [16], where each square has an arbitrary weight.