

Optimal packings of disks on torus

Anton Nikitenko

(Saint Petersburg State University, Chebyshev Lab, Delone Lab)

Abstract

We consider packings of congruent circles on a square flat torus, i.e., periodic (w.r.t. a square lattice) planar circle packings, with the maximal circle radius. Similar problems of packing disks on different flat tori have been studied previously by R. Connelly ([1, 2]) and W. Dickinson ([3]); the particular case of the square torus is especially interesting due to a practical reason: D. Usikov has shown it to be important for the problem of "super resolution of images" ([8]). In our work([5]) we have adopted an algorithm used to find optimal arrangements of spherical caps on a sphere ([6]) for the flat case and with its help have found optimal arrangements for six, seven and eight circles (optimal packings of up to five circles have been previously determined by Dickinson et al. in [4]).

Joint work with Oleg Musin.

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