



All papers

Go!

Mathematics > Combinatorics

Unit Distances in Three Dimensions

Haim Kaplan, Jiri Matousek, Zuzana Safernova, Micha Sharir

(Submitted on 6 Jul 2011)

We show that the number of unit distances determined by n points in \mathbb{R}^3 is $O(n^{3/2})$, slightly improving the bound of Clarkson et al. established in 1990. The new proof uses the recently introduced polynomial partitioning technique of Guth and Katz [[arXiv:1011.4105](#)]. While this paper was still in a draft stage, a similar proof of our main result was posted to the arXiv by Joshua Zahl [[arXiv:1104.4987](#)].

Comments: 13 pages

Subjects: **Combinatorics (math.CO)**

MSC classes: 52C10

Cite as: [arXiv:1107.1077](#) [[math.CO](#)]

(or [arXiv:1107.1077v1](#) [[math.CO](#)] for this version)

Submission history

From: Jiří Matoušek [[view email](#)]

[v1] Wed, 6 Jul 2011 09:51:00 GMT (16kb)

[Which authors of this paper are endorsers?](#)

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

math.CO

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[math](#)

References & Citations

- [NASA ADS](#)

Bookmark([what is this?](#))

