

Discrete and Computational Geometry, SS 14  
Exercise Sheet “9”: Well separated pair decomposition  
University of Bonn, Department of Computer Science I

- *Written solutions have to be prepared until **Tuesday June 24th, 14:00 pm**. There will be a letterbox in the LBH building, close to Room E01.*
- *You may work in groups of at most two participants.*
- *Please contact Hilko Delonge, [hilko.delonge@uni-bonn.de](mailto:hilko.delonge@uni-bonn.de), if you want to participate and have not yet signed up for one of the exercise groups.*
- *If you are not yet subscribed to the mailing list, please do so at <https://lists.iai.uni-bonn.de/mailman/listinfo.cgi/lc-dcgeom>*

**Exercise 25: Correctness of FindPairs (4 Points)**

Prove that the pairs of sets constructed by the procedure `FindPairs` do in fact fulfill the WSPD requirement:

$$\forall p \neq q \in S \exists i (p \in A_i \text{ and } q \in B_i) \text{ or } (q \in A_i \text{ and } p \in B_i).$$

**Exercise 26: Construction of WSPD (4 Points)**

Construct the WSPD for  $s = 3$  and the set  $S = \{0, 4, 5, 7, 12, 13, 14, 16\}$  in  $\mathbb{R}^1$ .

**Exercise 27: Complexity in general (4 Points)**

Give an example for a WSPD where  $\sum_{i=1}^n |A_i| + |B_i|$  is larger than linear in  $n$ .