Randomized Techniques for Parameterized Algorithms*

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Abstract. Since the introduction of the Color Coding technique in 1994 by Alon, Yuster, and Zwick, randomization has been part of the toolkit for proving fixed-parameter tractability results. It seems that randomization is very well suited to parameterized algorithms: if the task is to find a solution of size k and only those random choices need to be correct that are directly related to the solution, then typically we can bound the error probability by a function of k. The talk will overview through various concrete examples how randomization appears in fixed-parameter tractability results. We argue that in many cases randomization appears in form of a reduction: it allows us to reduce the problem we are trying to solve to an easier and more structured problem.

* Research supported by the European Research Council (ERC) grant "PARAMTIGHT: Parameterized complexity and the search for tight complexity results," reference 280152.

D.M. Thilikos and G.J. Woeginger (Eds.): IPEC 2012, LNCS 7535, p. 2, 2012.