Fixed-parameter linear-time algorithms for finding Colorful Independent Sets

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Abstract. In this seminar, we will study an NP-hard graph problem that naturally arises in scheduling: given a vertex-colored interval graph, find a maximum-cardinality independent set whose vertices have pairwise distinct colors. Using the techniques presented in the lectures on fixed-parameter algorithms and kernelization, we will develop linear-time data reduction algorithms and, moreover, algorithms for solving this generally NP-hard problem in linear time if the number of colors in the input graphs is constant.