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Block Graphs and $\sum C_j$ Criterion

Consider a scheduling problem where the following input is given: a set of machines; a set of jobs; an optimality criterion; and a binary relation over the set of jobs. In this model no two jobs that are in the relation can be scheduled on the same machine.

When the relation forms a block graph the scheduling problem under the makespan criterion is closely related to the problem of equitable coloring of a block graph. Both the problems were given attention in a few recent papers, e.g. [1] and [2]. However, the problem of scheduling under $\sum C_j$ criterion was not investigated. Due to this, a proof that the problem is NP-hard even in a restricted case is presented. Moreover, an algorithm with a constant approximation ratio is presented as well.

This is a joint work with Krzysztof Giaro.

References

[1] H. Furmańczyk, T. Pikies, I. Sokołowska, and K. Turowski, *Task scheduling for block-type conflict graphs*, arxiv, CoRR abs/2207.05868, 2022.

[2] G. de C. M. Gomes, C. V. G. C. L Lima, and V. F. dos Santos, *Parameterized Complexity of Equitable Coloring*, Discrete Mathematics and Theoretical Computer Science 1, 2019, pp. 1–11.