

## Upon One Smoothing Problem in Project Management

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**Abstract :** A CPM network project with deterministic activity durations, in which activities require homogenous resources with fixed capacities, is considered. The problem is to determine the optimal schedule of starting times for all network activities within their maximal allowable limits (in order not to exceed the network's critical time) to minimize the maximum required resources for the project at any point in time. In case when a non-critical activity may start only at discrete moments with the pre-given time span, the problem becomes NP-complete and an optimal solution may be obtained via a look-over algorithm. For the case when a look-over requires much computational time an approximate algorithm is suggested. The algorithm's performance ratio, i.e., the relative accuracy error, is determined. Experimentation has been undertaken to verify the suggested algorithm.

**Keywords :** resource smoothing problem, CPM network, lookover algorithm, lexicographical order, approximate algorithm, accuracy estimate

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