

Institut für Diskrete Mathematik

**Vortrag im Seminar für Kombinatorik und Optimierung**

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## **Restricted Assignment Scheduling with Resource Constraints**

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We consider parallel machine scheduling with job assignment restrictions, i.e., each job can only be processed on a certain subset of the machines. Moreover, each job requires a set of renewable resources. Any resource can be used by only one job at any time. The objective is to minimize the makespan. We present approximation algorithms with constant worst-case bound in the case that each job requires only a fixed number of resources. For some special cases optimal algorithms with polynomial running time are given. If any job requires at most one resource and the number of machines is fixed, we give a PTAS. On the other hand we prove that the problem is APX-hard, even when there are just three machines and the input is restricted to unit-time jobs.

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