

# Sequencing with Uncertain Processing Times and Release Dates

Claus Gwiggner  
Institute for Operations Research, University of Hamburg  
Germany  
claus.gwiggner@uni-hamburg.de

We study the problem of determining an a priori sequence of tasks subject to uncertain processing times and release dates. We follow a two-stage approach, where a sequence is established in the first stage and a re-sequencing operation is performed in the second stage. The difficulty is the exponential number of scenarios.

In its simplest form, the second stage can be modeled as a non-homogeneous Markov Chain. The expected dual multipliers used in a Benders' cut then correspond to the transient means of the chain, which can be computed efficiently.

Our results show that we can find optimal solutions to the problem for instances with huge variability.

## References

- [1] M. Pinedo, Stochastic scheduling with release dates and due dates, *Operations Research* 31/3, 559 - 572, 1983.
- [2] G. Laporte, F. Louveaux, and L. van Hamme, An Integer L-Shaped Algorithm for the Capacitated Vehicle Routing Problem with Stochastic Demands, *Operations Research* 50/3, 415-423, 2002.