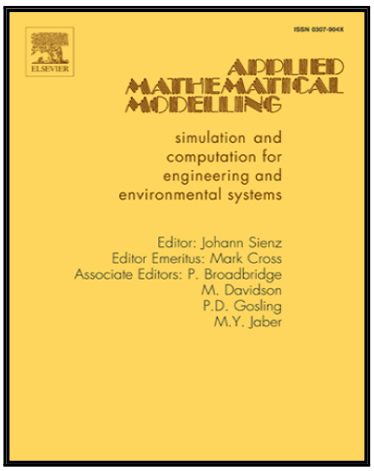

Scheduling flexible job-shops with transportation times: mathematical models and a hybrid imperialist competitive algorithm

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Highlights

- Transportation time incorporate in flexible job shop scheduling.
- We mathematically formulate the problem by two mixed integer linear programming models.
- We propose a novel imperialist competitive algorithm hybridized by a simulated annealing.
- The proposed algorithm is evaluated by comparing against two high performing algorithms.