

VORTRAG

A Branch-and-Cut Algorithm for the Pickup and
Delivery Traveling Salesman Problem
with LIFO Loading

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Abstract:

In the Traveling Salesman Problem with Pickup and Delivery (TSPPD) a single vehicle must serve a set of customer requests, each defined by an origin location where a load must be picked up, and a destination location where the load must be delivered. The problem consists of determining a shortest Hamiltonian cycle through all locations while ensuring that the pickup of each request is performed before the corresponding delivery. This paper addresses a variant of the TSPPD in which pickups and deliveries must be performed according to a Last-In First-Out (LIFO) policy. We propose three mathematical formulations for this problem and several families of valid inequalities which are used within a branch-and-cut algorithm. Computational results performed on test instances from the literature show that instances with up to 25 requests can be solved in reasonable CPU time.