

# Meta- and Matheuristic Approaches for the Symmetric Quadratic Traveling Salesman Problem

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This work investigates the *Symmetric Quadratic Traveling Salesman Problem*, which is an extension of the classical (linear) *Traveling Salesman Problem*. The quadratic case aims to minimize the total cost of a tour, where cost values are not associated to single edges, but to every successive pair of edges. We discuss this highly complex problem and introduce heuristic approaches in order to construct and improve solutions. The range of methods comprises pure heuristic procedures, metaheuristics, and introduces matheuristic ideas as well. Computational results are analyzed, including optimal benchmarking and the discussion of algorithmic designs.

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