

**A PTAS FOR THE MIN- $k$ -SCCP IN A EUCLIDEAN SPACE OF ARBITRARY  
FIXED DIMENSION****E. D. Neznakhina**

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We study the Min- $k$ -SCCP on a partition of a complete weighted digraph into  $k$  vertex-disjoint cycles of minimum total weight. This problem is a generalization of the known traveling salesman problem (TSP) and a special case of the classical vehicle routing problem (VRP). It is known that the problem Min- $k$ -SCCP is strongly  $NP$ -hard and preserves its intractability even in the geometric statement. For the Euclidean Min- $k$ -SCCP in  $\mathbb{R}^d$  with  $k = O(\log n)$ , we construct a polynomial-time approximation scheme, which generalizes the approach proposed earlier for the planar Min-2-SCCP. For any fixed  $c > 1$  the scheme finds a  $(1 + 1/c)$ -approximate solution in  $O(n^{O(d)}(\log n)^{(O(\sqrt{d}c))^{d-1}})$  time.

Keywords: cycle covering of size  $k$ , traveling salesman problem (TSP),  $NP$ -hard problem, polynomial-time approximation scheme (PTAS).

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