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Improving on the 1.5-Approximation of a Smallest 2-Edge Connected Spanning Subgraph

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Abstract   We give a $\frac{17}{12}$-approximation algorithm for the following NP-hard problem:

> Given a simple undirected graph, find a 2-edge connected spanning subgraph that has the minimum number of edges.

The best previous approximation guarantee was $\frac{3}{2}$. If the well known $\frac{4}{3}$ conjecture for the metric TSP holds, then the optimal value (minimum number of edges) is at most $\frac{4}{3}$ times the optimal value of a linear programming relaxation. Thus our main result gets half-way to this target.