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Compact roundtrip routing with topology-independent node names

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Abstract

Consider a strongly connected directed weighted network with n nodes. This paper presents compact roundtrip routing schemes with $\tilde{O}(\sqrt{n})$ sized local tables[4] and stretch 6 for any strongly connected directed network with arbitrary edge weights. A scheme with local tables of size $\tilde{O}(\epsilon^{-1}n^{2/k})$ and stretch $\min((2^{k/2}-1)(k+\epsilon), 8k^2+4k-4)$, for any $\epsilon > 0$ is also presented in the case where edge weights are restricted to be polynomially-sized. Both results are for the topology-independent node-name model.