"A Lower Bound for the Quickest Path Problem"
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The point-to-point quickest path problem is a classical network optimization problem with numerous applications, including that of computing driving directions. In this paper, we define a lower bound on the time-to-target which is both accurate and fast to compute. We show the potential of this bound by embedding it into an A algorithm. Computational results on three large European metropolitan road networks, taken from the OpenStreetMap database, show that the new lower bound allows to achieve an average reduction of 14.36%. This speed-up is valuable for a typical web application setting, where a server needs to answer a multitude of quickest path queries at the same time. Even greater computing time reductions (up to 28:06%) are obtained when computing paths in areas with moderate speeds, e.g. historical city centers.*