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Jonas Azzam and **Raanan Schul***, schul@math.sunysb.edu. *Taking shortcuts in Euclidean space.*

For a given connected set Γ in d -dimensional Euclidean space, we construct a connected set $\tilde{\Gamma} \supset \Gamma$ such that the two sets have comparable Hausdorff length, and the set $\tilde{\Gamma}$ has the property that it is quasiconvex, i.e. any two points x and y in $\tilde{\Gamma}$ can be connected via a path, all of which is in $\tilde{\Gamma}$, which has length bounded by a fixed constant multiple of the Euclidean distance between x and y . Thus, for any set K in d -dimensional Euclidean space we have a set $\tilde{\Gamma}$ as above such that $\tilde{\Gamma}$ has comparable Hausdorff length to a shortest connected set containing K . Constants appearing here depend only on the ambient dimension d . In the case where Γ is "nice", our constants are also independent the dimension d , and in this case, our theorem holds for Γ in an infinite dimensional Hilbert space. This is joint work with Jonas Azzam (Received August 02, 2010)