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**David Recio-Mitter\*** (dar318@lehigh.edu). *Geodesic complexity*.

The topological complexity  $TC(X)$  of a space  $X$  was introduced in 2003 by Farber to measure the instability of robot motion planning in  $X$ . The motion is not required to be efficient in that setting.

We define a new version of topological complexity in which we require the robot to move along shortest paths (minimal geodesics), which we call geodesic complexity. We show that the geodesic complexity is sensitive to the metric and in general differs from the topological complexity, which only depends on the homotopy type of the space. (Received September 04, 2019)