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**Federico Ardila, Megan Owen\*** (maowen@berkeley.edu) and **Seth Sullivant**. *Geodesics in  $CAT(0)$  Cubical Complexes*.

A cubical complex is a polyhedral complex in which all the cells are unit cubes. By giving each cube the Euclidean L2 metric, we get a natural metric on the whole complex. These complexes arise in such areas as geometric group theory, reconfigurable systems, and phylogenetics. If a cubical complex is globally non-positively curved or  $CAT(0)$ , then there is a unique shortest path or geodesic between any two points in the complex. We present an algorithm for finding this path, which make use of a bijection between  $CAT(0)$  cubical complexes and posets with inconsistent pairs. (Received January 19, 2011)