A comparative study of curvature on trees

SAWYER JACK ROBERTSON

Abstract. There are several interrelated notions of discrete curvature on graphs. Many approaches utilize the optimal transportation metric on its probability simplex or the distance matrix of the graph. In this survey article, we compute formulas for three different types of curvature on graphs. Along the way, we obtain a comparison result for the curvatures under consideration, a degree-diameter theorem for trees, and a combinatorial identity for certain sums of distances on trees.

1