

# Consistent edge weights on complete graphs

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## 1 Problem

Given a complete undirected graph  $G = (V, E)$  with non-negative edge weights, the problem is to change the minimum number of weights so that they form a metric, i.e., they obey the triangle inequality  $w_{ij} \leq w_{ik} + w_{kj}$ . The problem can be viewed as a generalization of correlation clustering, in which edge weights are restricted to be 0 or 1. Recently, an  $O(\log n)$ -approximation was given for this problem using combinatorial methods. The objective of this stage is to see if other methods can be used to get better lower and upper bounds for this problem. The project will include a programming part to compare the previous (very simple to implement) algorithm with different approaches such as some elementary linear programming relaxations.