## Contents

1. Introduction

1.1. Komm 1.1

No, this does not change the analysis. The analysis for the approximation ratio comes from showing $\texttt{ALG} \geq \frac{W}{2}$. The proposed changes to the algorithm only incrases the value of $\texttt{ALG}$ for any instance, so this lower bound is still effective. Furthermore, the family of instances provided to show that $r = 2$ is tight for the original algorithm also shows that $r = 2$ is tight for this algorithm.

1.2. Komm 1.2

Consider the following instance on K_4.
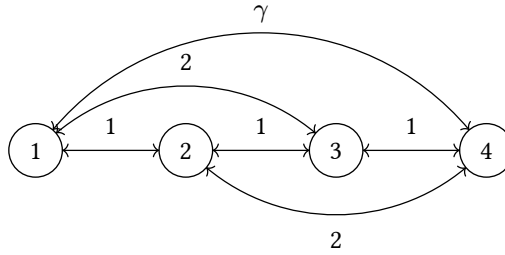
Then the approximation ratio is,

$$\frac{\texttt{ALG}}{\texttt{OPT}} = \frac{3 + \gamma}{6} = \frac{1}{2} + \frac{\gamma}{6}.$$

By making γ arbitrarily large, we may then make the approximation ratio arbitrarily large.

1.3. Komm 1.3

We prove this by induction. Let $P(k)$ be the statement that all edges added in the first k rounds are in the minimum spanning tree.