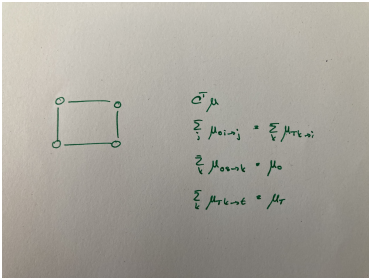


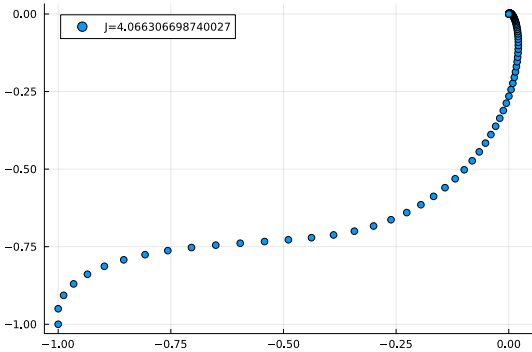
1 Background

minimize $\sum_{u \rightarrow v} \ell_{u \rightarrow v} \cdot x_{u \rightarrow v}$
subject to $\sum_u x_{u \rightarrow s} - \sum_w x_{s \rightarrow w} = 1$
 $\sum_u x_{u \rightarrow t} - \sum_w x_{t \rightarrow w} = -1$
 $\sum_u x_{u \rightarrow v} - \sum_w x_{v \rightarrow w} = 0$ for every vertex $v \neq s, t$
 $x_{u \rightarrow v} \geq 0$ for every edge $u \rightarrow v$

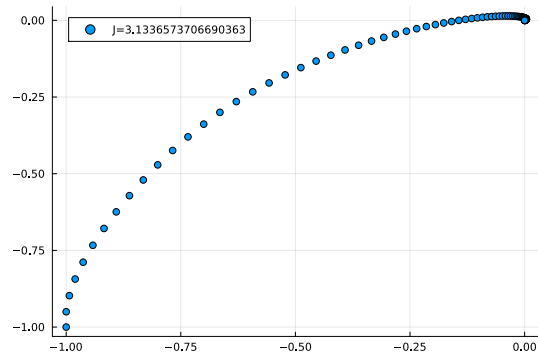
2 Method



3 Results



GMP lower bound 3.284206413152301



GMP lower bound 2.9969508477152416
 Graph of measures lower bound 2.996950836877236

4 References

<https://arxiv.org/abs/math/0703377>