

# What is it and is it Semidefinite Programming?

Seminar Modern Methods in Combinatorial Optimization

May 22, 2015

What does the following Program model and is it a Semidefinite Program?

**Exercise:**

Given sets of vectors  $a_i, b_j$  both in  $\mathbb{R}^n$  and a vector  $c$  also in  $\mathbb{R}^n$  consider the problem

$$\begin{array}{ll}\max & \rho \\ \text{s.t.} & (a_i - c)^T E (a_i - c) \leq 1 \quad \forall i \\ & (b_j - c)^T E (b_j - c) \geq \rho^2 \quad \forall j \\ & E \in \mathbb{S}_+^n\end{array}$$