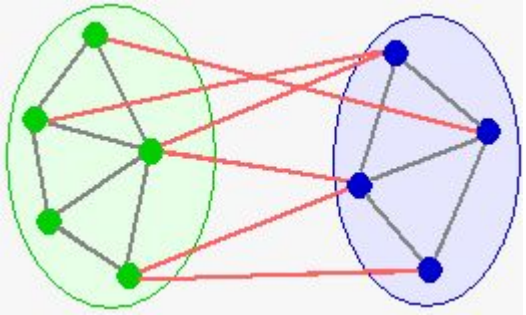
MAX CUT Problem



Max Cut : maximize total weight of edges between sets

SDP: solve semidefinite programming problem

Decompose solution X with Cholesky decomposition

Round the solution by introducing random hyperplane

Get the approximate Max Cut solution

$$\max_{x_i^2=1} x^\top A x \leq$$

$$\leq \max_{\substack{X \succeq 0 \\ diag(X)=1_n \\ X = V^\dagger V,}} \operatorname{Tr}(AX) =$$

$$= \min_{\operatorname{Diag}(\lambda) \succeq A} \operatorname{Tr} \operatorname{Diag}(\lambda)$$