

Suppose we want to compute the opt. value

$$v^* := \max \{ e^T x : x \in F \}.$$

If $\varepsilon < \frac{n-1}{n^2}$ then $v^* = \lfloor \bar{v} \rfloor$,

where

$$\bar{v} := \max \{ e^T x : x \in \text{conv}(F(\varepsilon)) \}.$$

The bound becomes

$O(n^9 \ln(n))$, since we can

pick $\frac{1}{\varepsilon} = O(n)$.

Seems worthwhile to investigate good choices for $\kappa > 0$, D_2 for specific combinatorial opt. problems. (The bound above can be improved as well.)