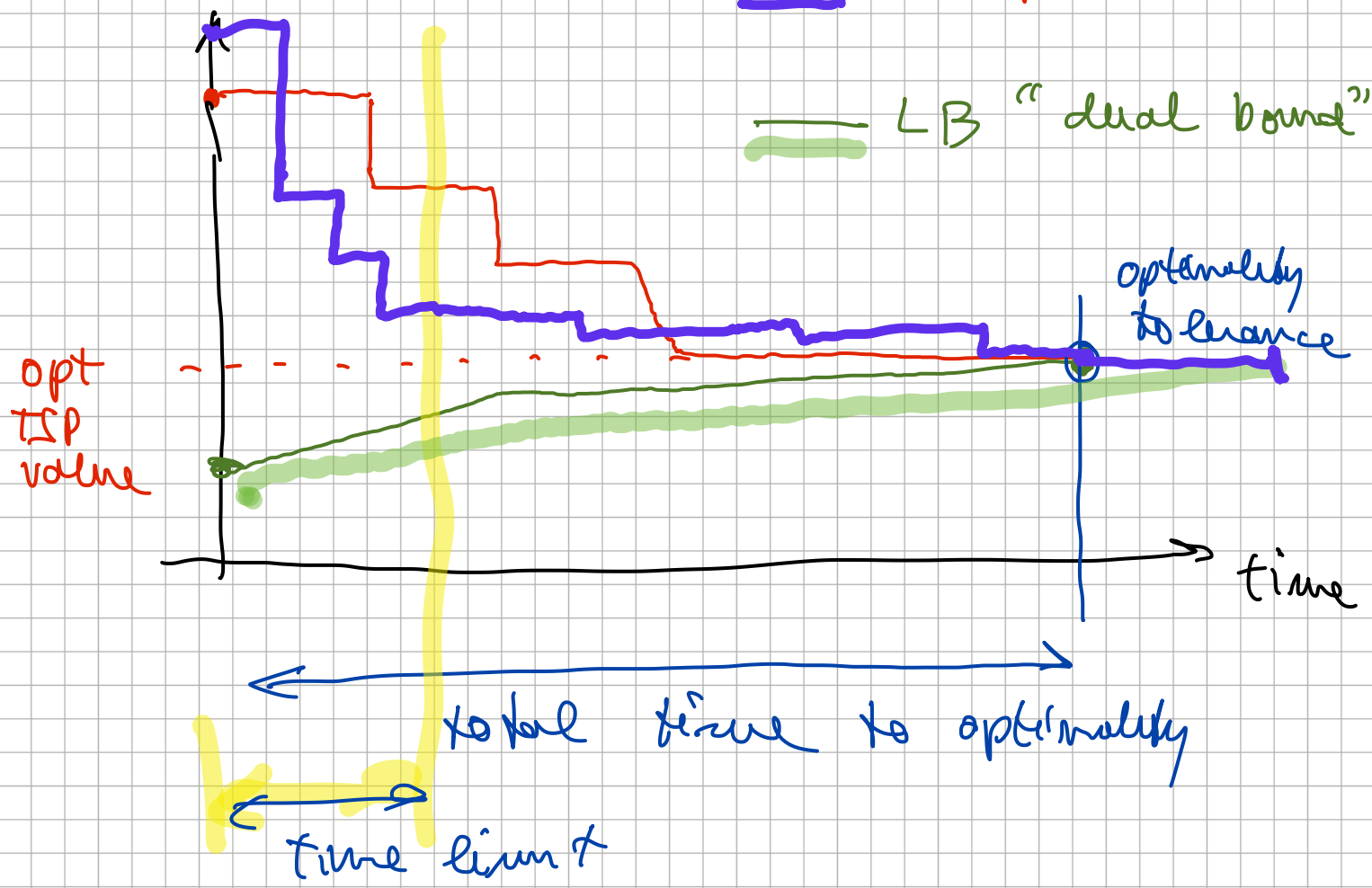


OR 2 18 - may - 2022

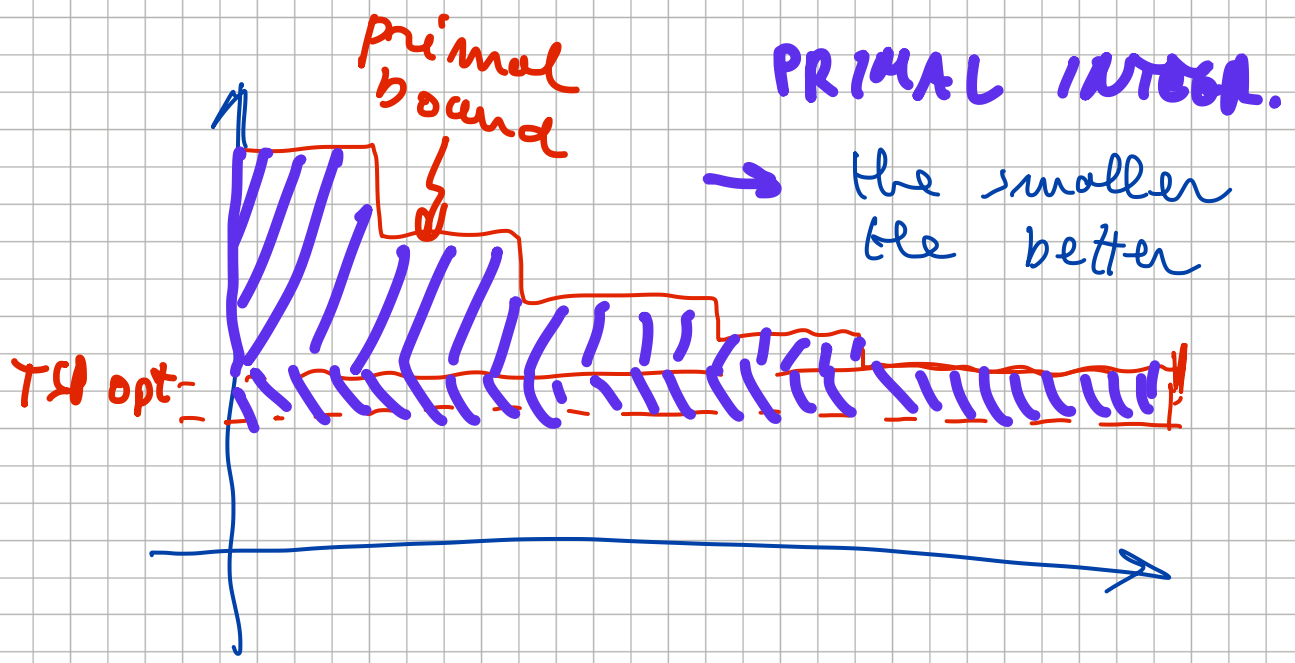
① TOTAL TIME TO OPTIMALITY

2 alternative runs:

— VB "primal bound"  
 — LB "dual bound"



② PRIMAL INTEGRAL



# RELEVANT CPLEX'S PARAM.S

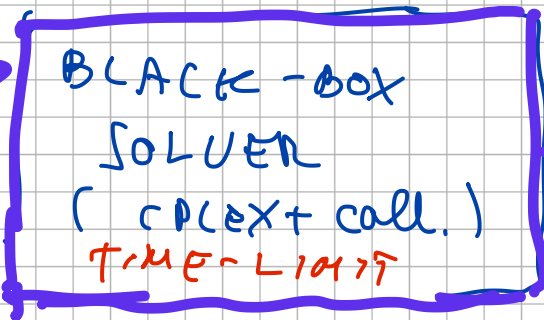
- MIP emphasis:  $= 5$
  - \* → **RIWS** frequency  $\begin{cases} = 0 & \text{default} \\ = 10 & \text{(nodes)} \\ = 100 \end{cases}$
  - \* → POLISHING heuristic
    - "genetic alg." at the end
- t.e. 3600 sec.s  
**3000** sec.s → start polishing

## MATHEURISTICS

TIP

in distance

$x_{ij} = 1$   
for same  
 $(i, j) \in E$

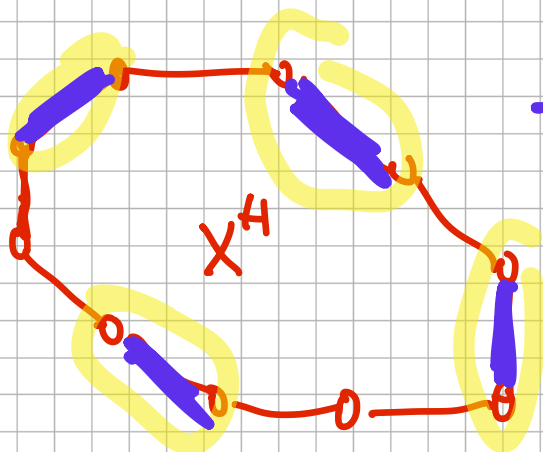


TSP  
incumbent

$X^H$

(DIVING heur.)

HARD FIXING heuristic.

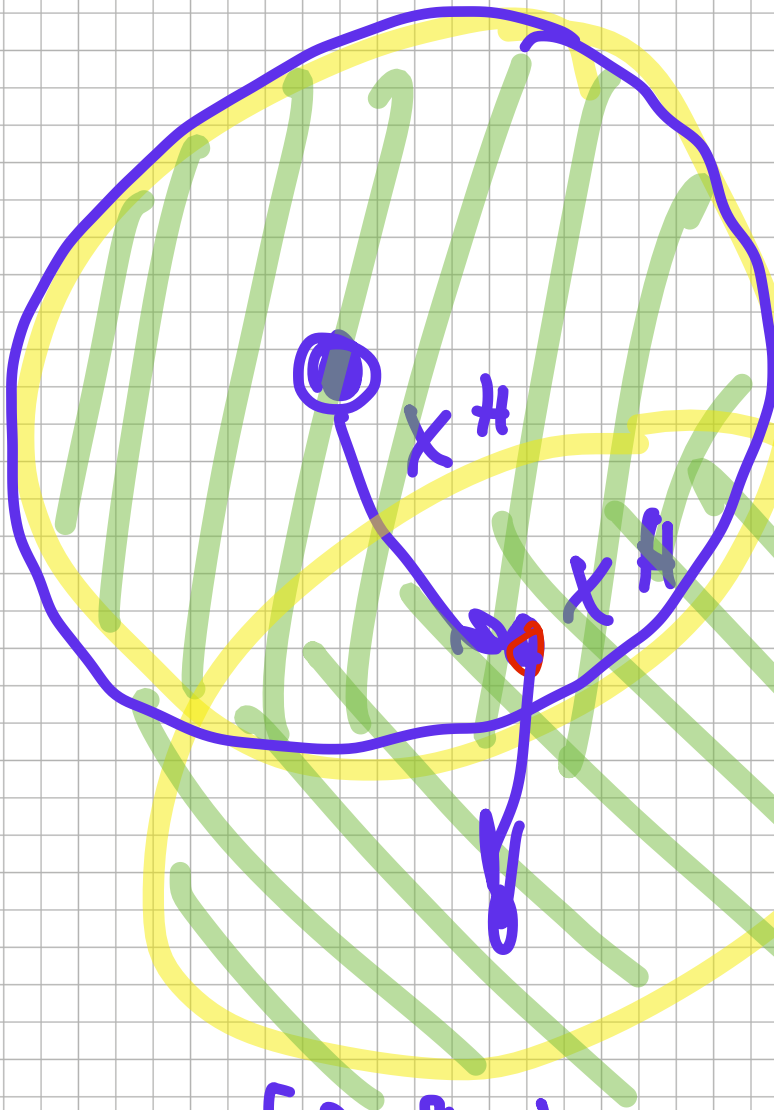


$x_{ij} = 1$

$x_{ij} \in \{0, 1\}$



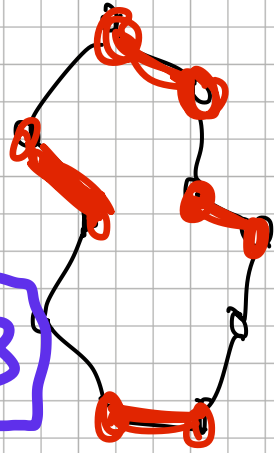
random selection of the edges in FIX



$p_{fix} = 0.3$

30%

probability of fixing



$p_{fix} \left\{ \begin{array}{l} 0.8 \\ 0.5 \\ 0.3 \\ 0.2 \end{array} \right\}$

~~0.3~~ 0 0.3 1.0

"unfix all variables"

→ CHANGES to 0 the lower bound of ALL var.

→ REPEAT

REFINEMENT HEU