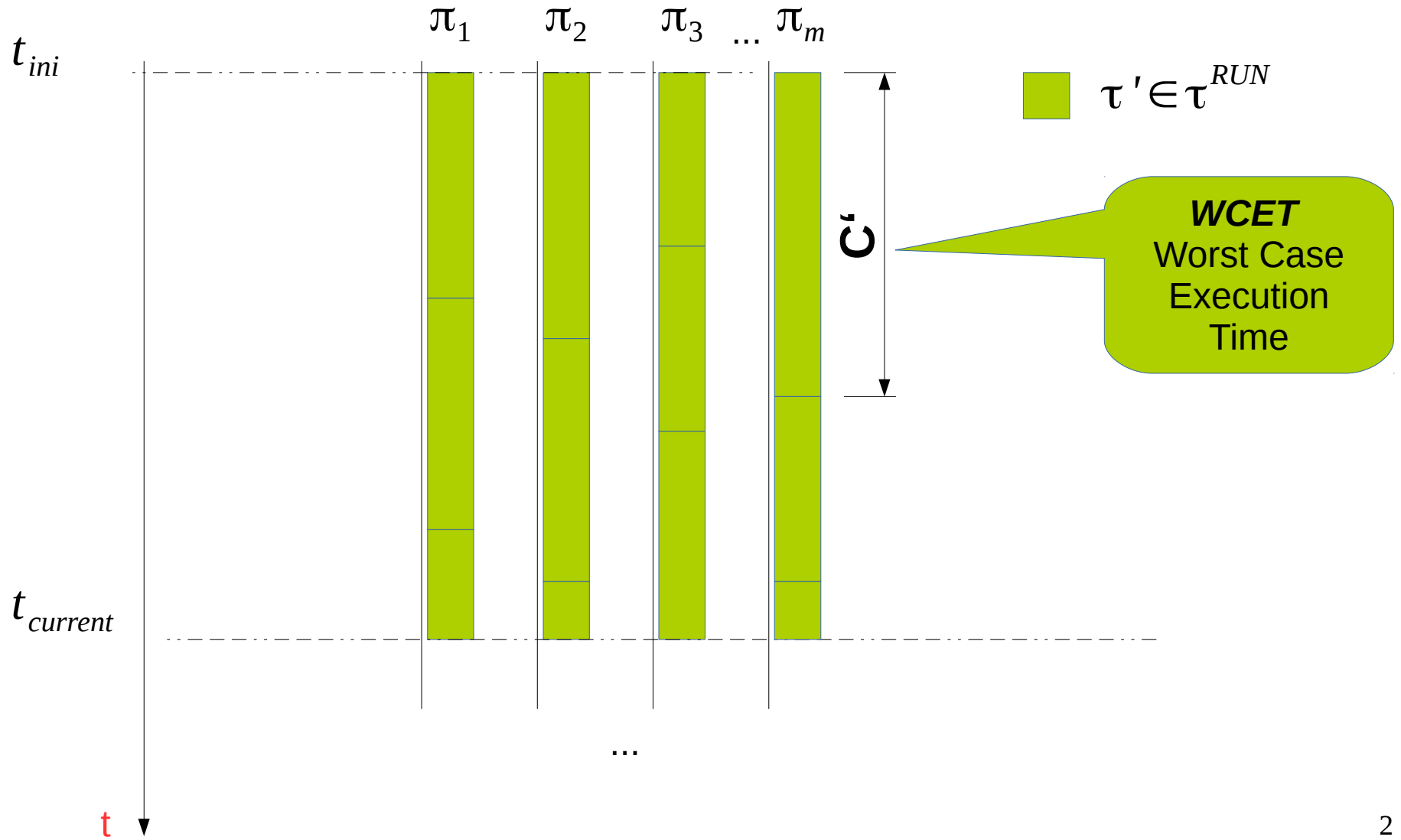# ECRTS 2017

JUNE 27 - 30, 2017, DUBROVNIK , CROATIA

Reduction to Uniprocessor Algorithm with Exploitation of Idle Times through Bayesian Networks
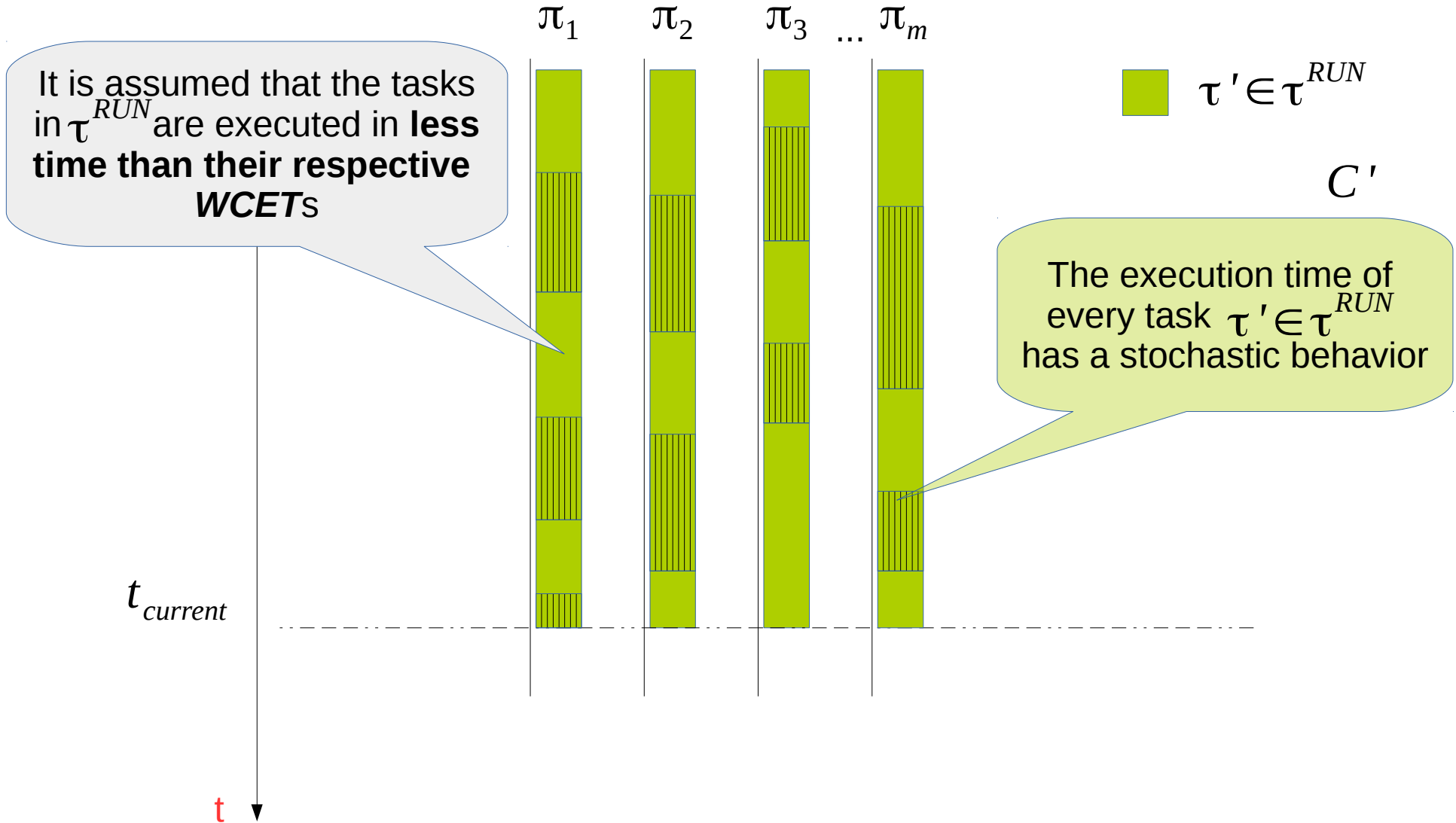
Authors:
José Ángel Hermosillo-Gómez and
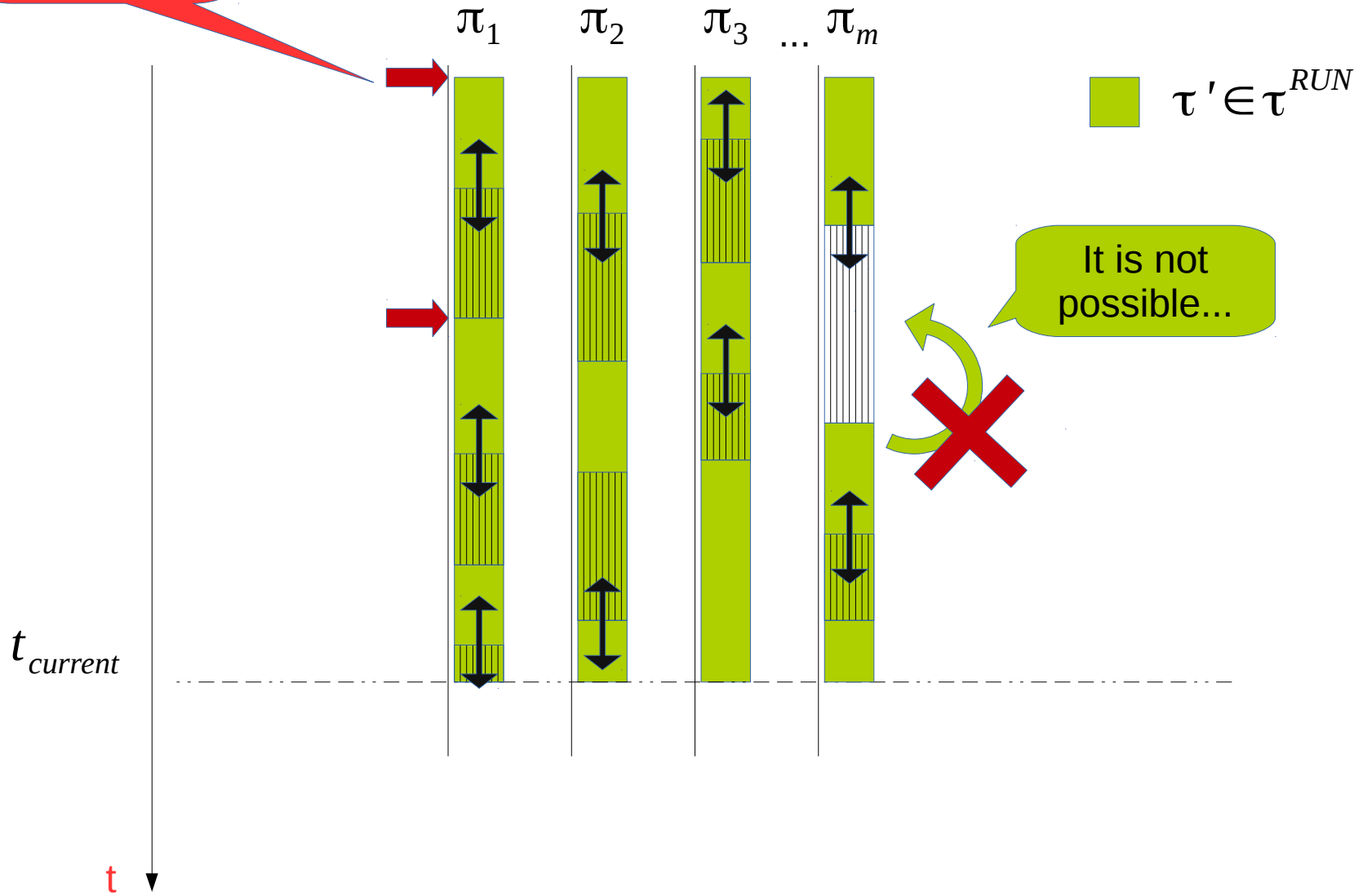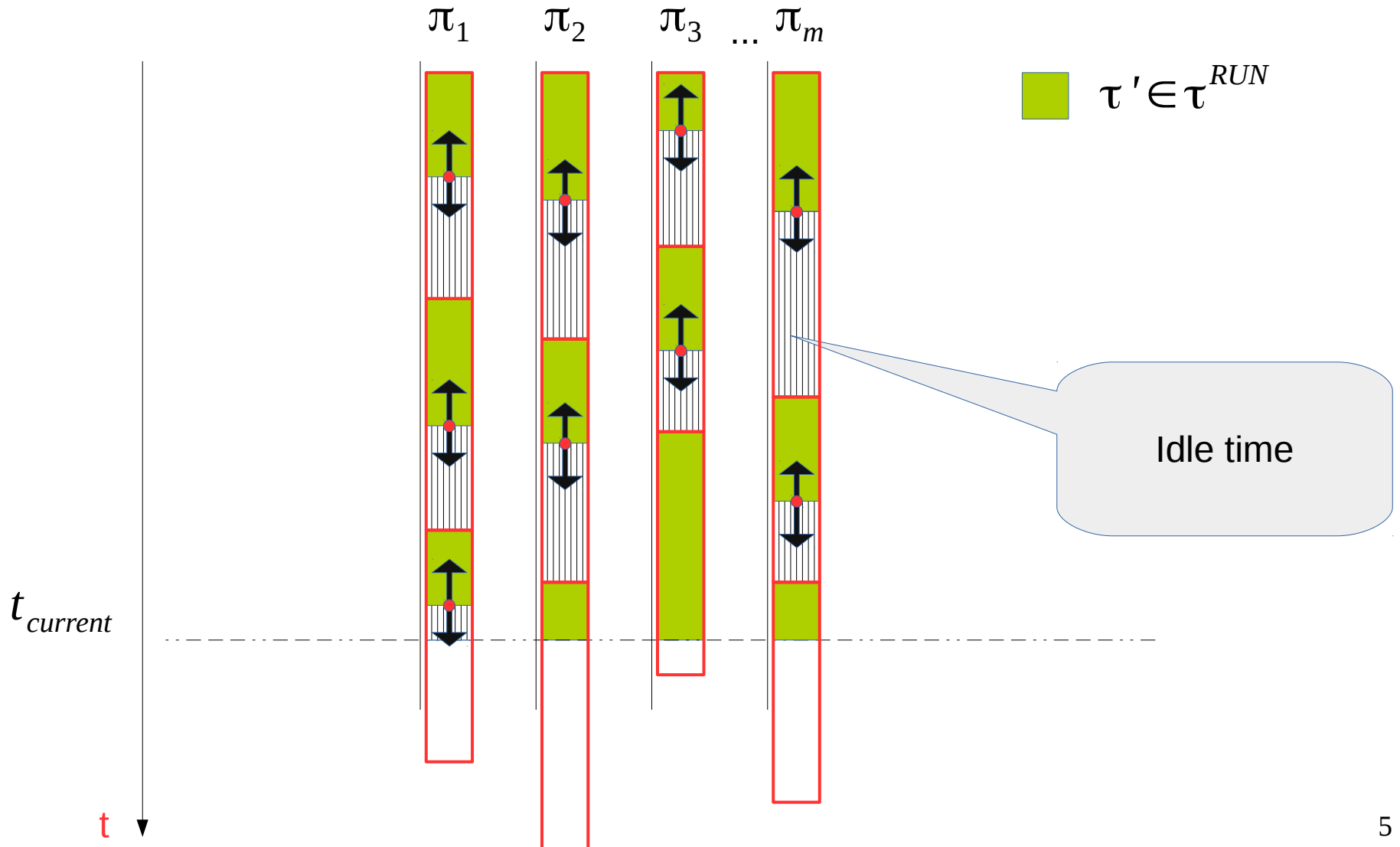*PhD. Héctor Benítez-Pérez*

RUN

Problem

π_1 π_2 π_3 π_m

It is assumed that the tasks in τ^{RUN} are executed in **less time than their respective WCETs**

$\tau' \in \tau^{RUN}$

C'

The execution time of every task $\tau' \in \tau^{RUN}$ has a stochastic behavior

$t_{current}$

t

Problem

Problem

π_1 π_2 π_3 ... π_m
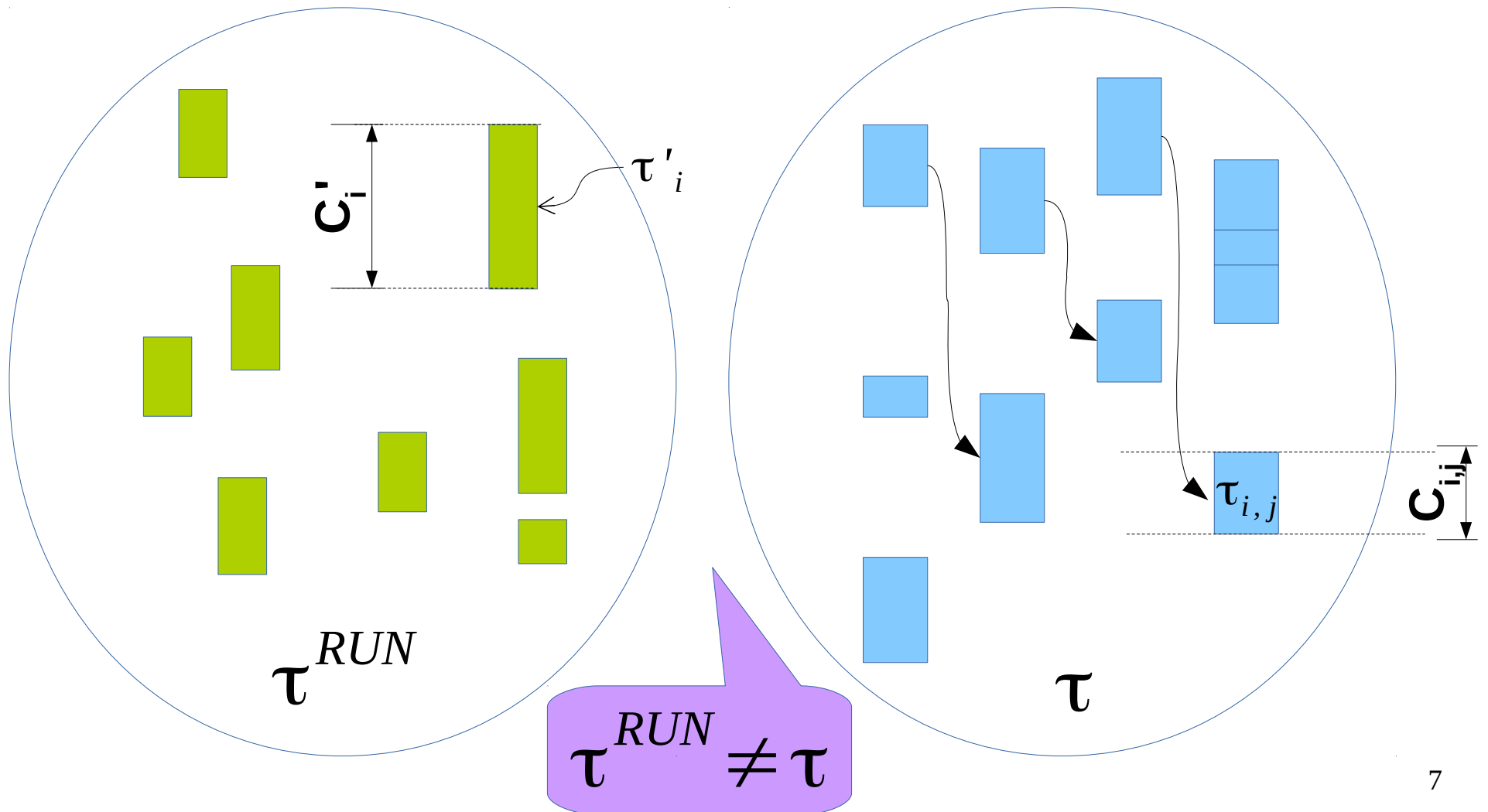
$\tau' \in \tau^{RUN}$

$t_{current}$

Idle time

t

5

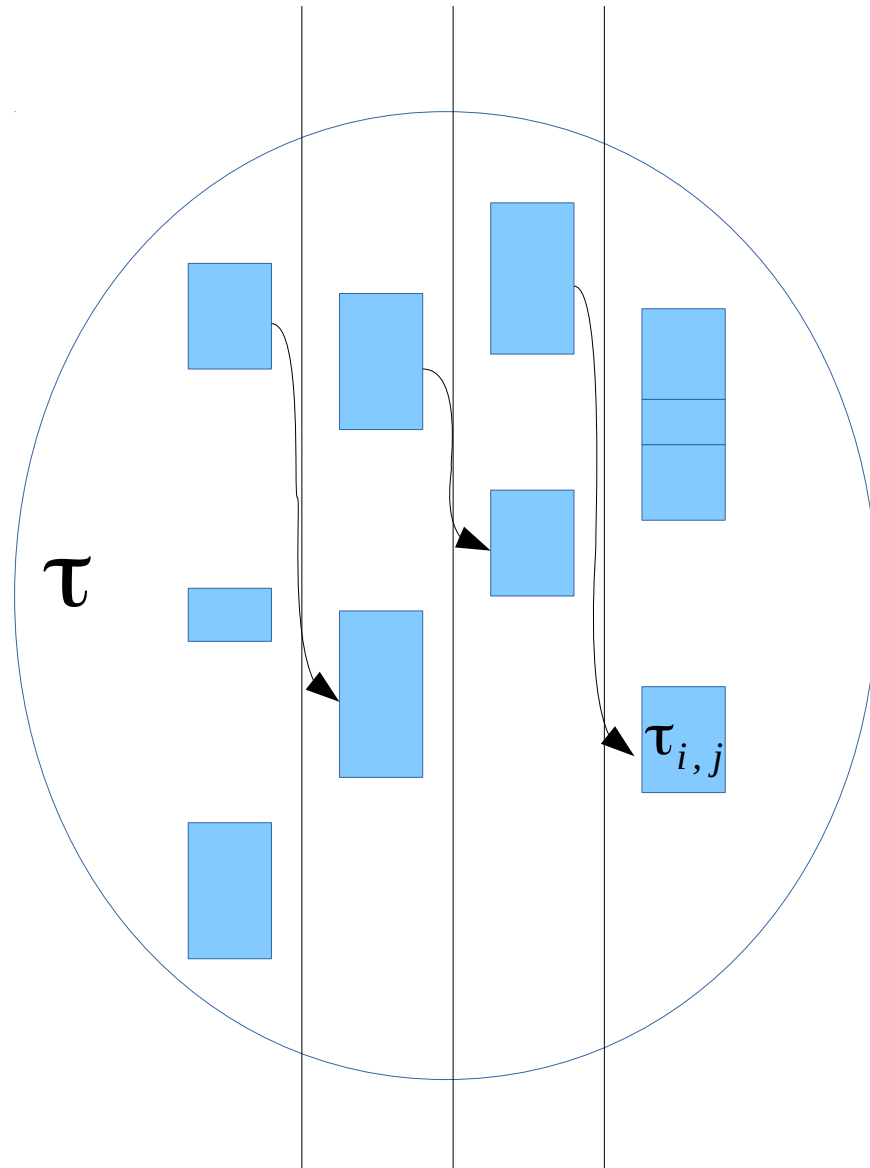# Approached solution (1/4)

- Take advantage of the idle times by means of adding an extra set of tasks, be τ. This extra set is disjoint to τ^{RUN}.

  ➔ τ is conformed by two types of tasks:

    1. Taks conformed by **just one job**
    2. Tasks of type **job-shop**

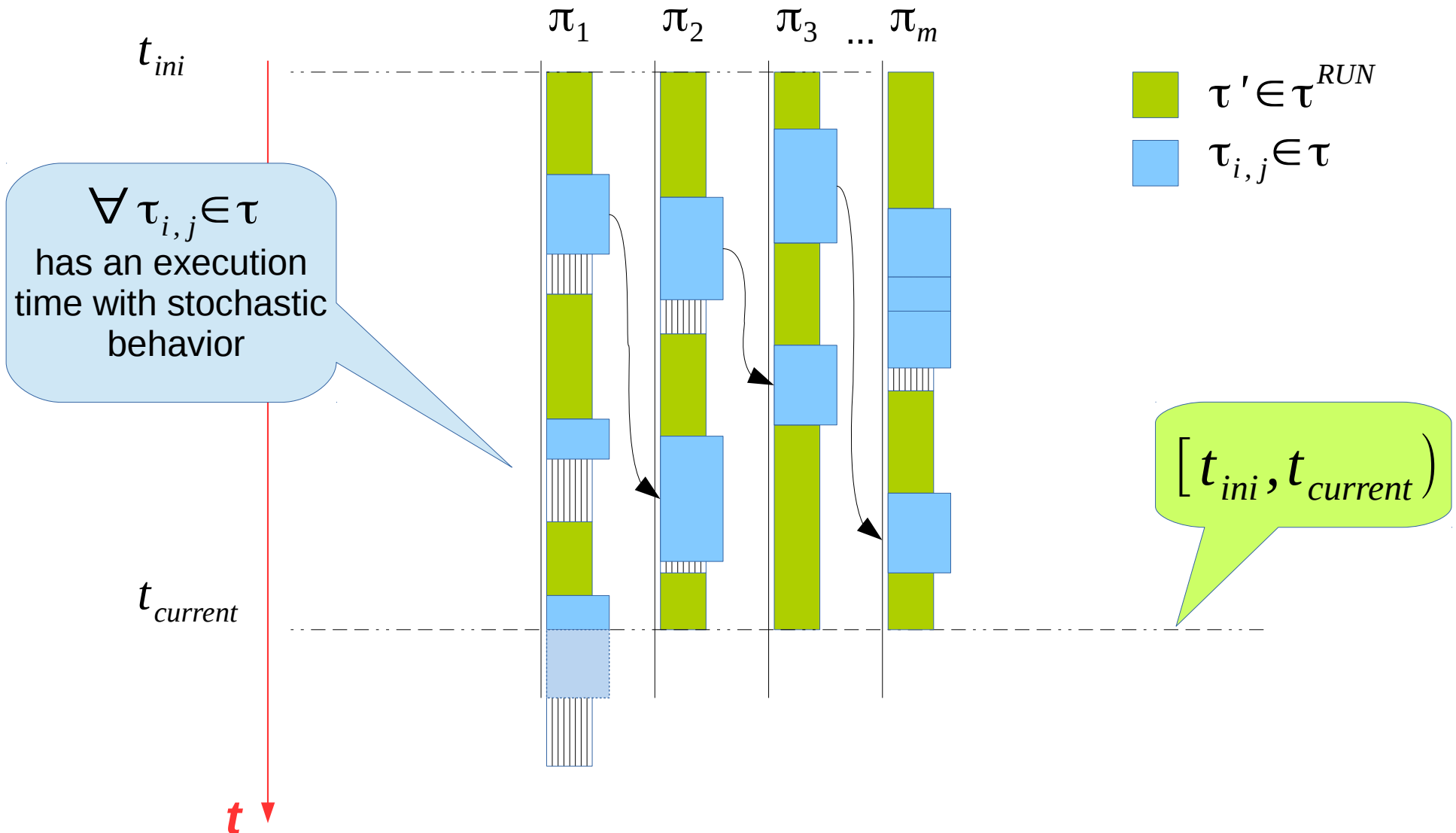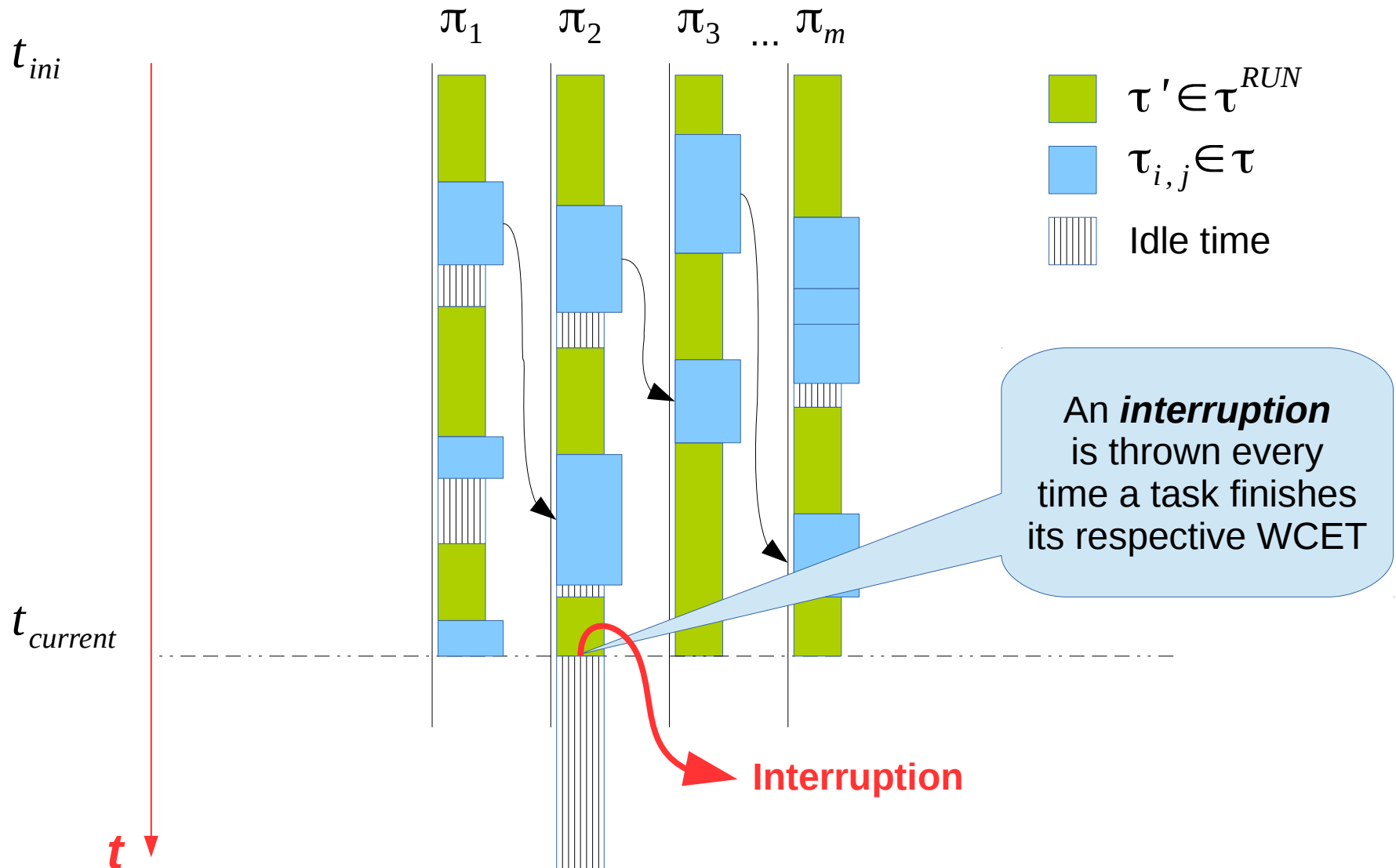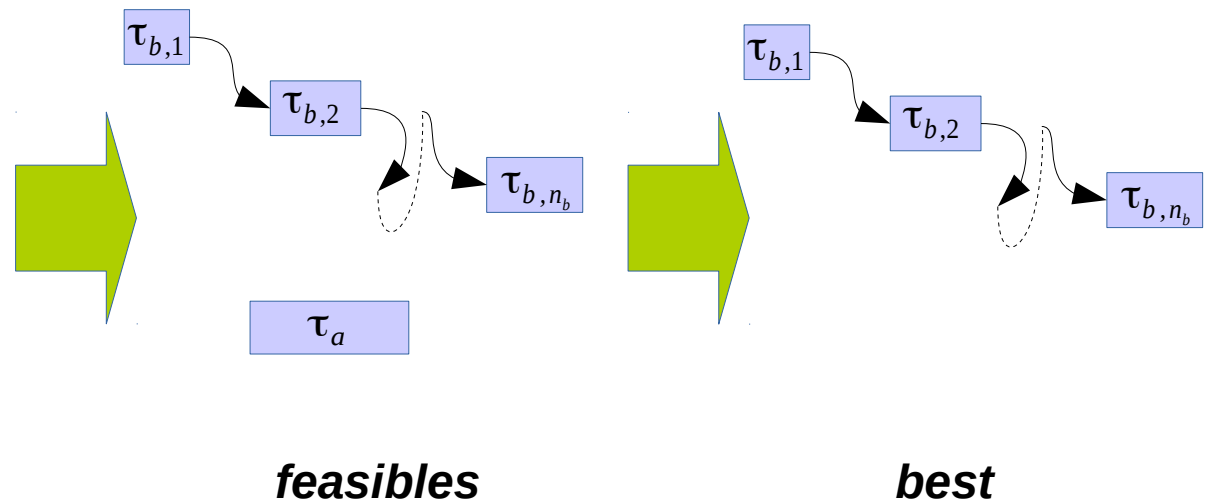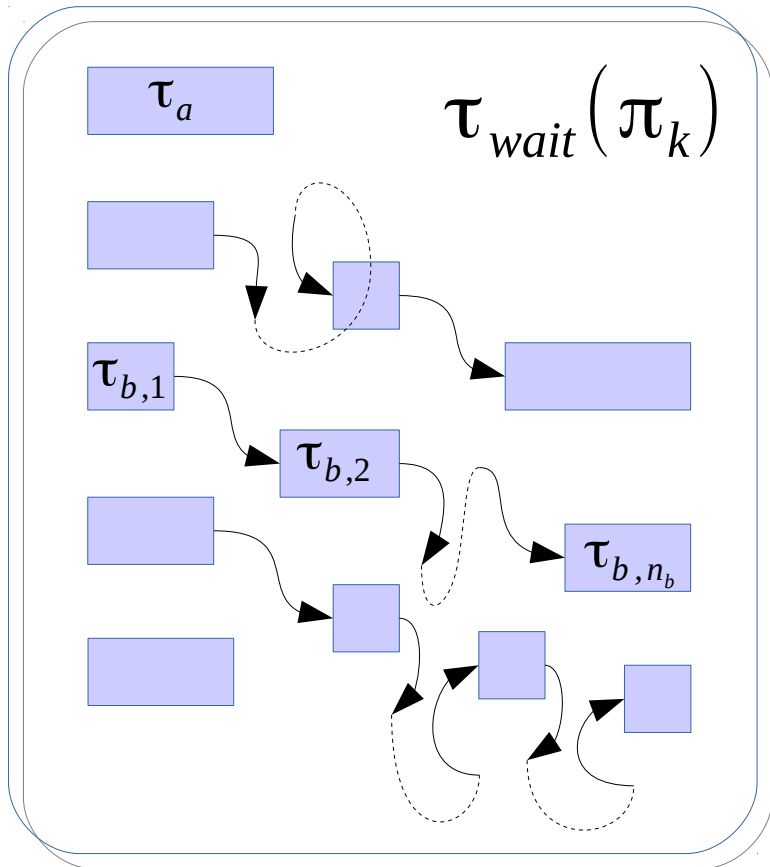# Approached solution (2/4)

Approached solution (3/4)

Approached solution (4/4)

RUN-*modified*

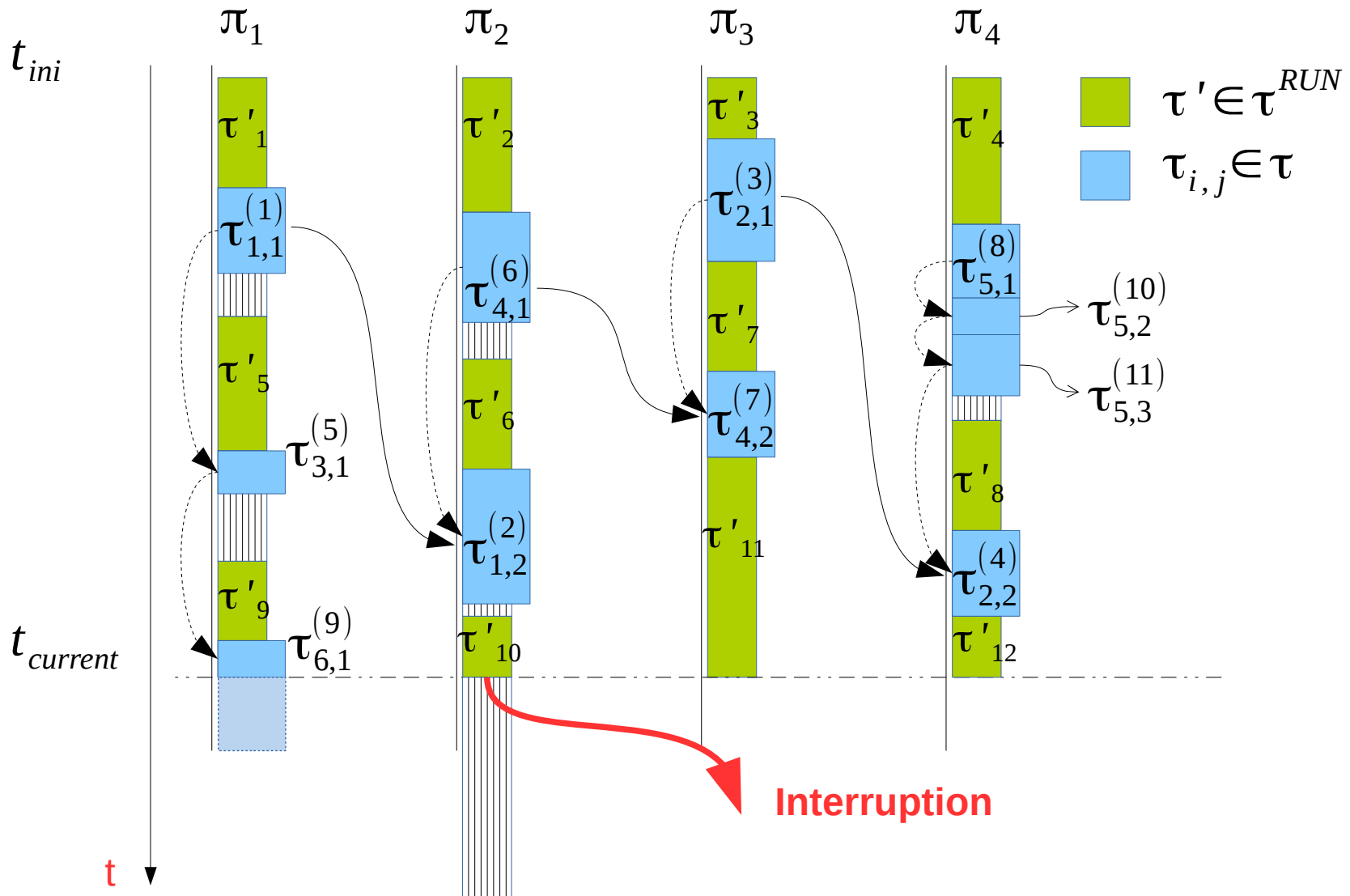# Bayesian inference

Bayesian inference

Bibliography

1) Regnier, P., Lima, G., Massa, E., Levin, G., and Brandt, S. *Multiprocessor scheduling by reduction to uniprocessor: an original optimal approach*. Real-Time Systems 49, 4 (2013), 436–474.

2) Pearl, J. *Fusion, propagation, and structuring in belief networks*. Artificial intelligence 29, 3 (1986), 241–288.