ELC 406A
Advanced Digital Communication

Lecture 6

Synchronization

Dr.Yasmine Fahmy
ELC 406A

Synchronization

- Carrier Synchronization

- Bit Synchronization

- Code Synchronization

Dr.Yasmine Fahmy
ELC 406A

Synchronization

- **Acquisition**
  - Coarse tunning
  - Once (start)
  - No data
  - accepted error = +/- Tc

- **Traking**
  - fine tunning
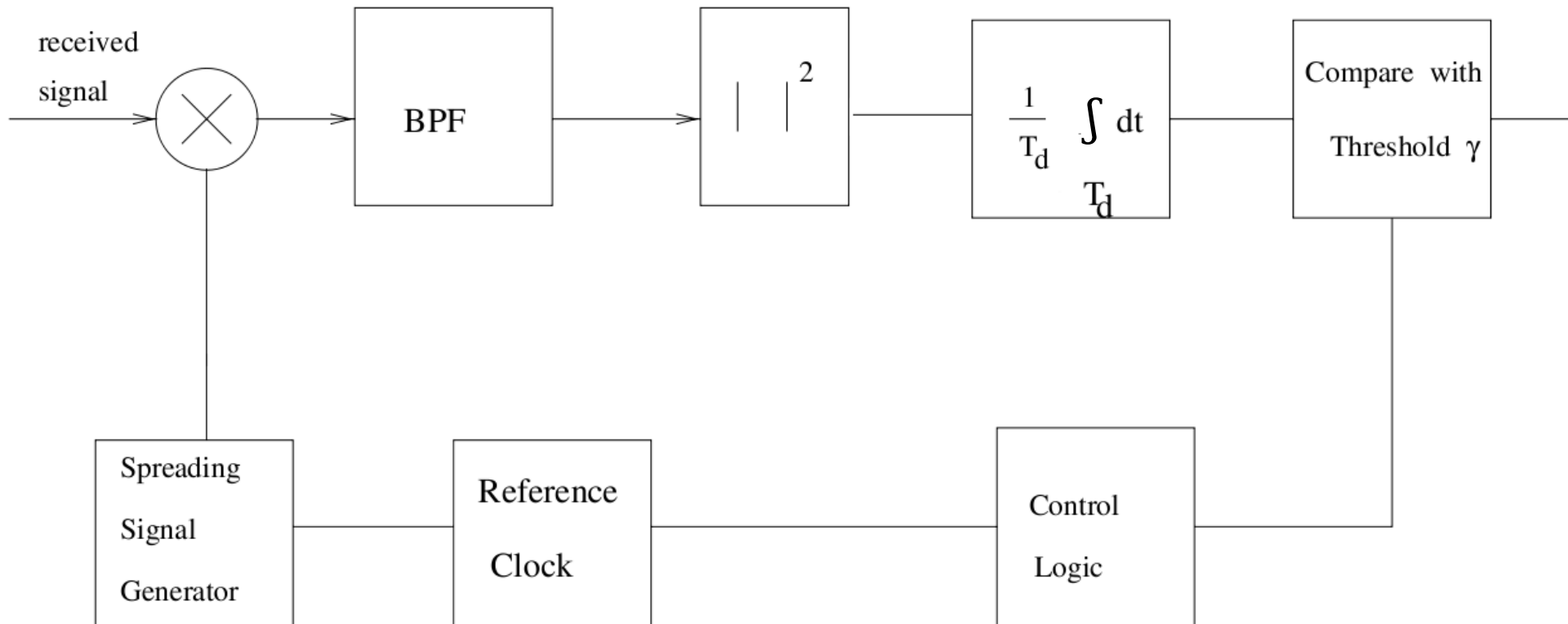 - All the time
  - with data
  - accepted error < +/- Tc

Acquisition

Two different errors:

➔ *False Alarm*

➔ *Miss*

Acquisition

Acquisition

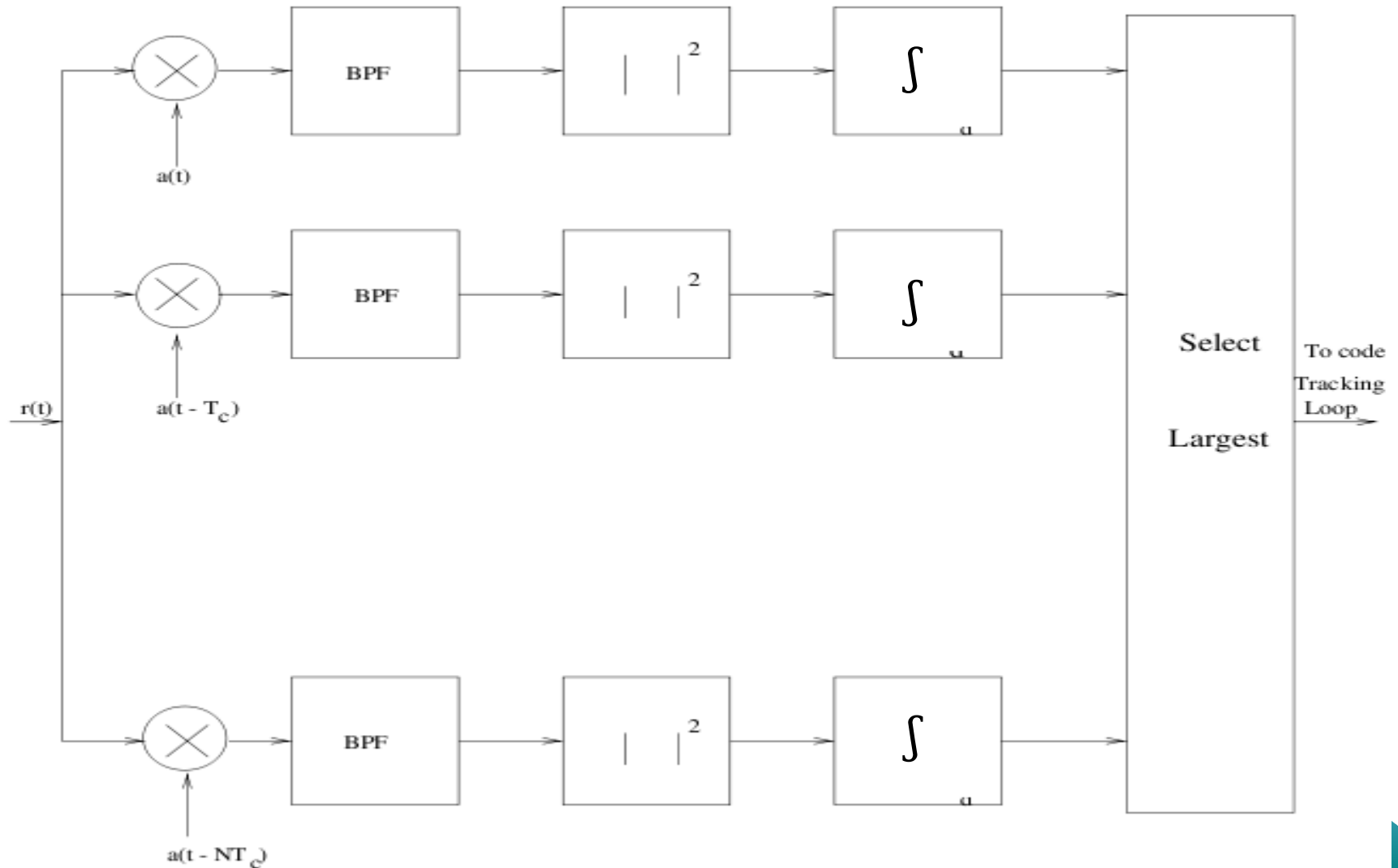Two important parameters:

➜ Window length: Td

➜ Threshold: γ

Acquisition

Different search techniques:

➔ Serial search

➔ Parallel search

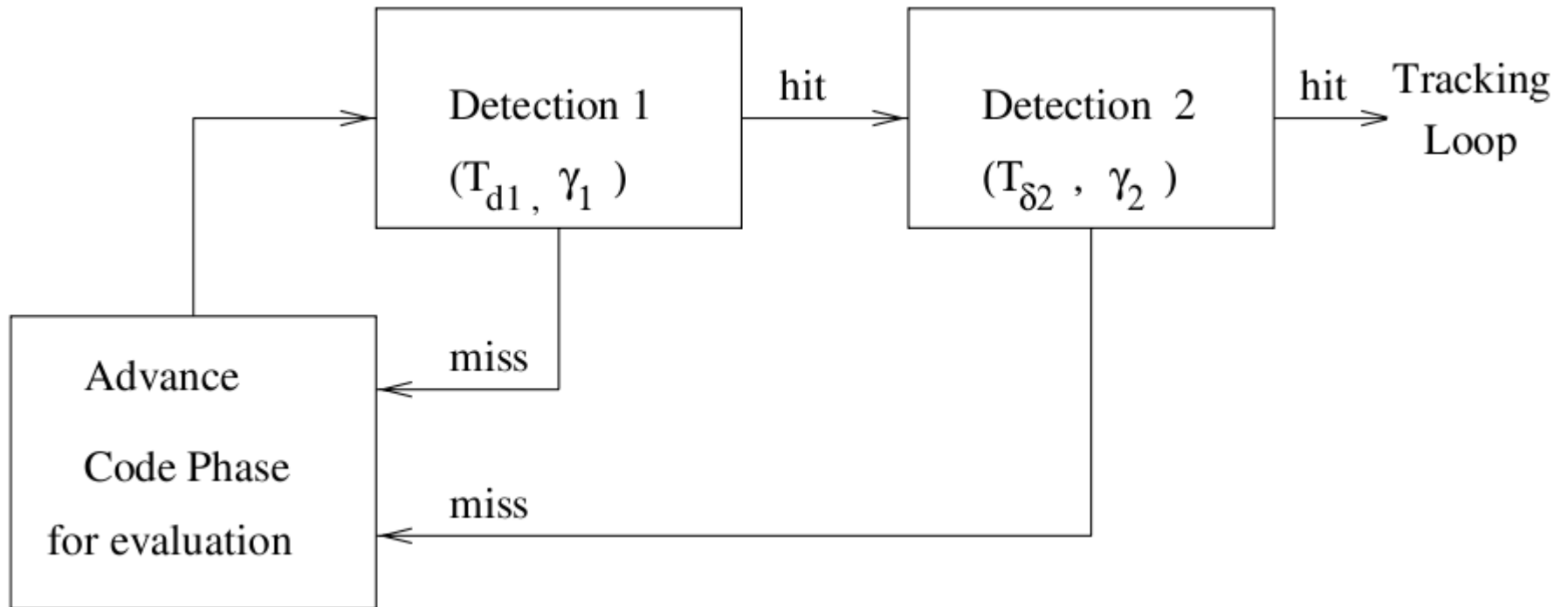➔ Hybrid search

Acquisition : Parallel

Acquisition

Different detection techniques:

➜ Single dwell

➜ Multi dwell

Acquisition : Multidwell

Acquisition

First detection stage: designed to have a low threshold and a short integration time such that the miss probability is small but the false alarm probability is high
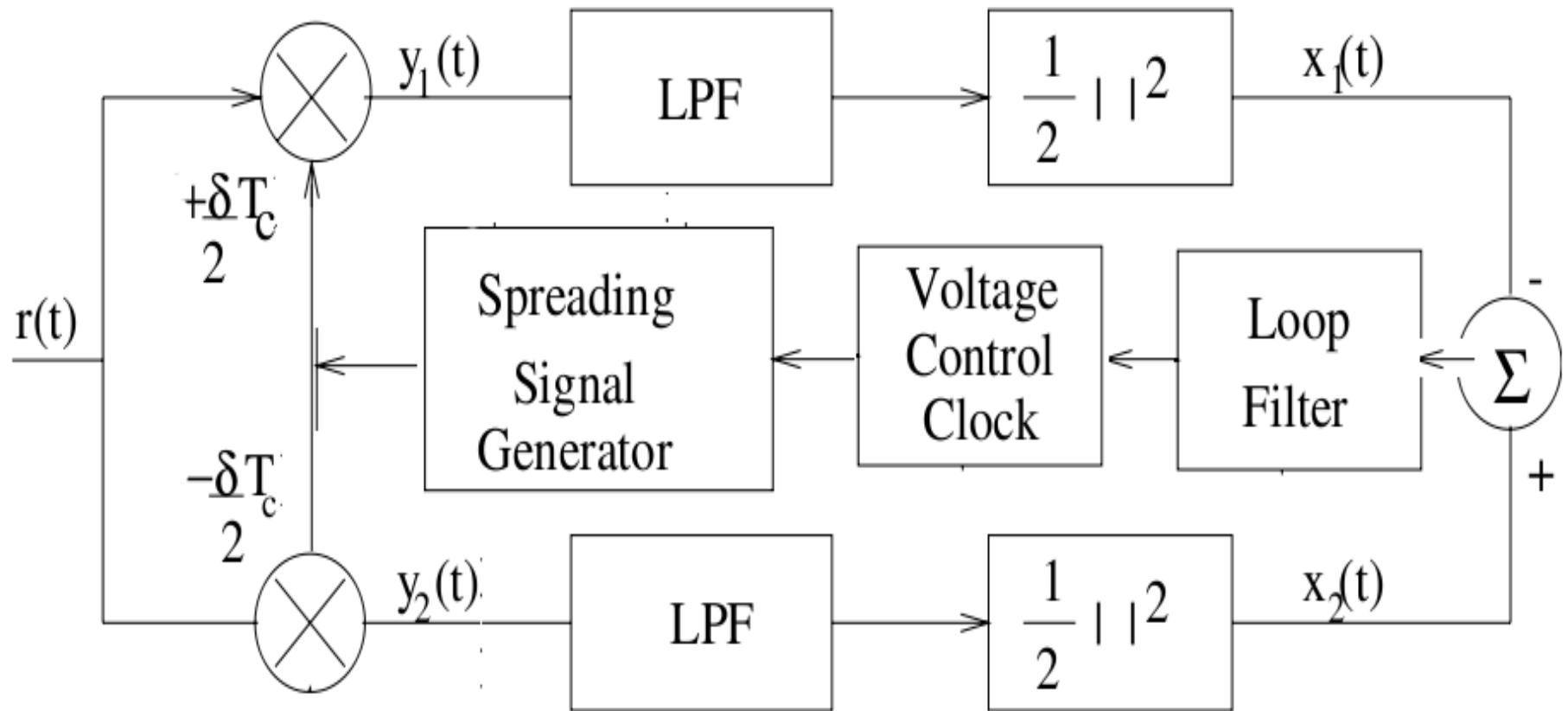
Second stage: designed to have small miss and false alarm probabilities. In this stage only the most probable cells (from the first stage) are tested.
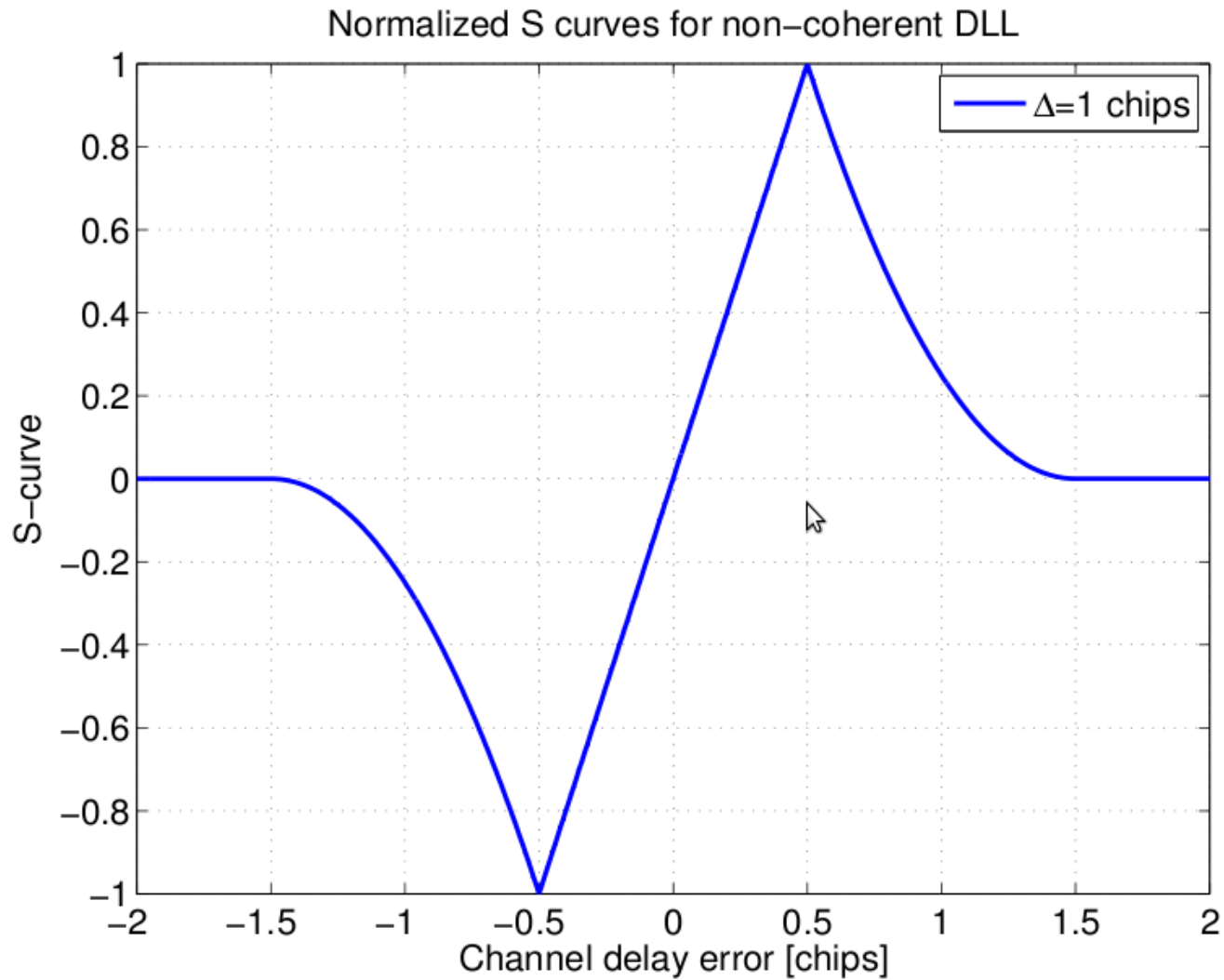
Tracking

Two Different techniques:

→ Delay locked loop   DSSS

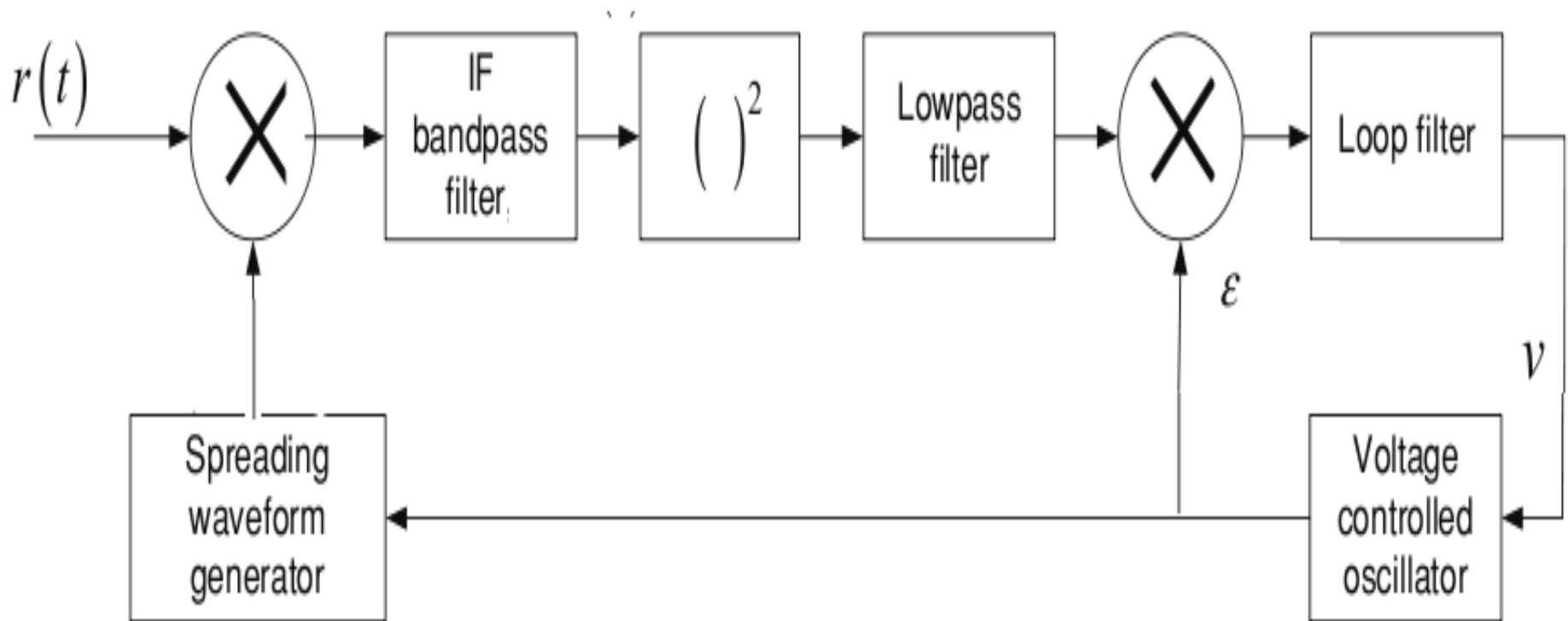(Early Late gate)

→ Tau-Dither   FHSS

Tracking : DLL

Tracking : DLL

Normalized S curves for non-coherent DLL

Tracking : Tau-Dither

Questions ???

Thank You

Dr.Yasmine Fahmy
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