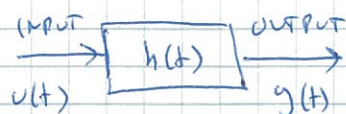


# - FADING MEMORY LTI:



$$y(t) = \int h(\tau) u(t-\tau) d\tau$$

$$= h(t) * u(t)$$

CAUSAL, IF

$$\int_0^\infty \Rightarrow h(t) = 0 \text{ For } t < 0$$

CONVOLUTION

(INTERNAL, SUM, ...)

$$= \sum h(\tau) u(t-\tau)$$

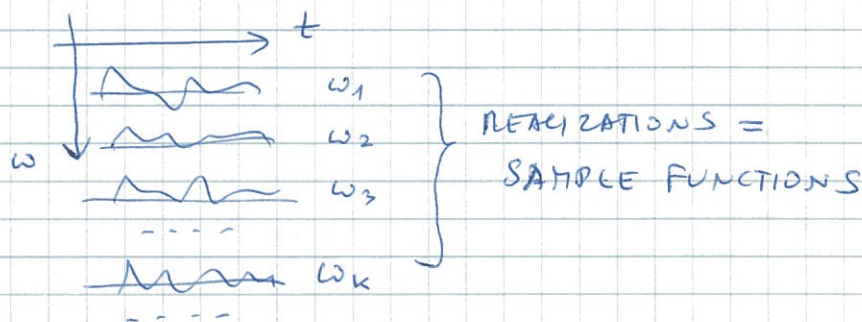
## - OPEN/CLOSE-LOOP:



## SIGNALS (INTERACTIONS)

- INDEPENDENT / DEPENDENT VARIABLE - TIME, FREQUENCY, OTHER?
- 1 DIM / N-DIM /  $\infty$ -DIM
- PERIODIC / NONPERIODIC / ALMOST PERIODIC
  - $\exists T: u(t+T) = u(t) \quad \forall t$
  - $\forall \epsilon > 0, \exists T > 0: |u(t+T) - u(t)| \leq \epsilon \quad \forall t$
- DETERMINISTIC / STOCHASTIC

L ASSEMBLY OF STOCHASTIC PROCESS  $y(t, \omega)$



- BAND LIMITED / NOT BAND LIMITED