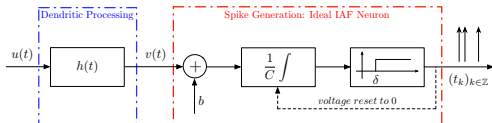
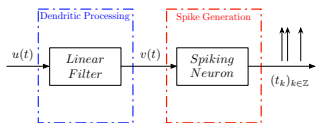


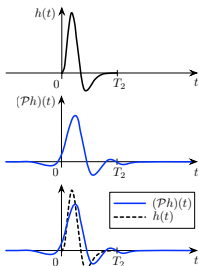
# Identifying Dendritic Processing

Aurel A. Lazar and Yevgeniy B. Slutskiy

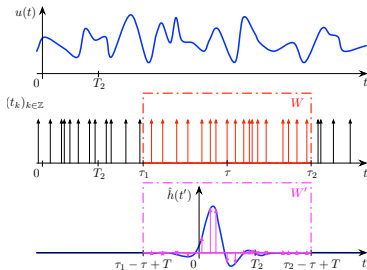
T5



## Problem Setting



## [Filter]-[Ideal IAF] Neural Circuit

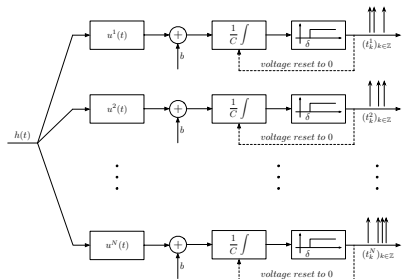


## Kernel and Its Projection

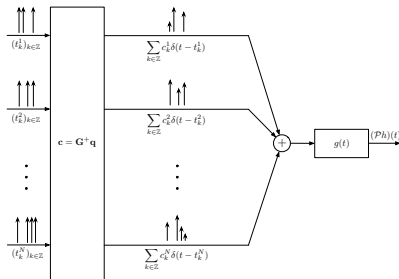
## Kernel Recovery

# SIMO TEM Interpretation of the Identification Problem & the Neuron Identification Machine

T5



SIMO TEM Interpretation



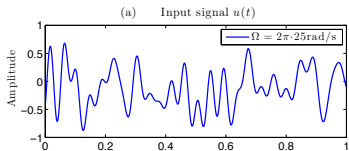
Neuron Identification Machine

$$(\mathcal{P}h)(t) = \sum_{j=1}^N \sum_{k \in \mathbb{Z}} c_k^j \psi_k^j(t).$$

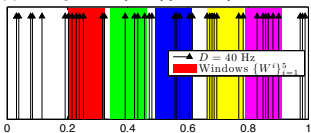
# Identifying the [Filter]-[Ideal IAF] Neural Circuit

Input Stimulus Bandwidth  $\Omega = 2\pi \cdot 25$  rad/s

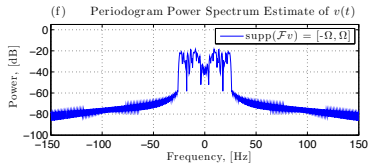
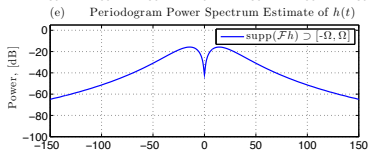
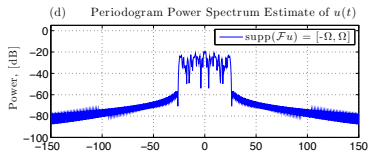
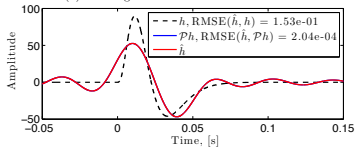
T5



(b) Output of the [Filter]-[Ideal IAF] neural circuit



(c) Original filter vs. the identified filter



# The Filter Identification Error

Versus the Number of Temporal Windows and Input Signal Bandwidth

T5

