

# HBO Onderzoek

## Bio-Informatica

### Kennistransfer naar Technische Informatica

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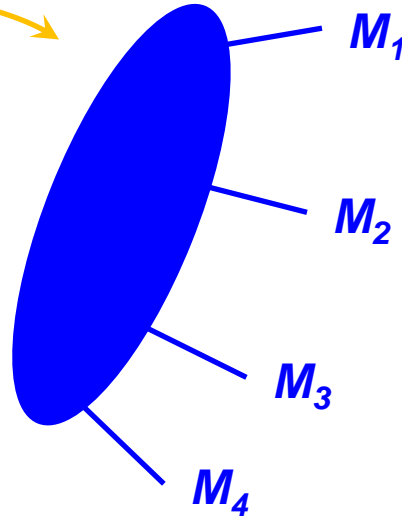
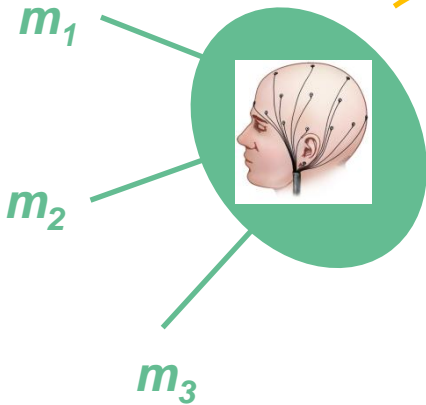
Kenniskring Life Sciences  
Hogeschool Zuyd

# Samenvatting

1. Bio-Informatica
2. Recurrence plot
3. Technische Informatica
4. Promotieonderzoek UM

# Bio-Informatica (EEG)

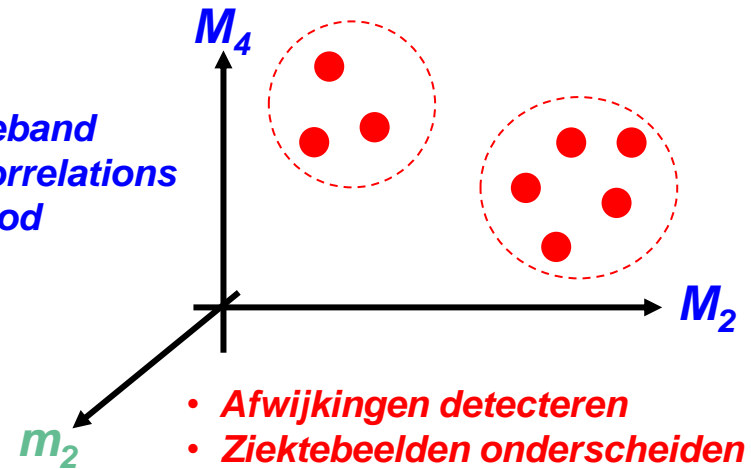
Transformatie



- *Fourier*
- *Recurrence plot*
- ...

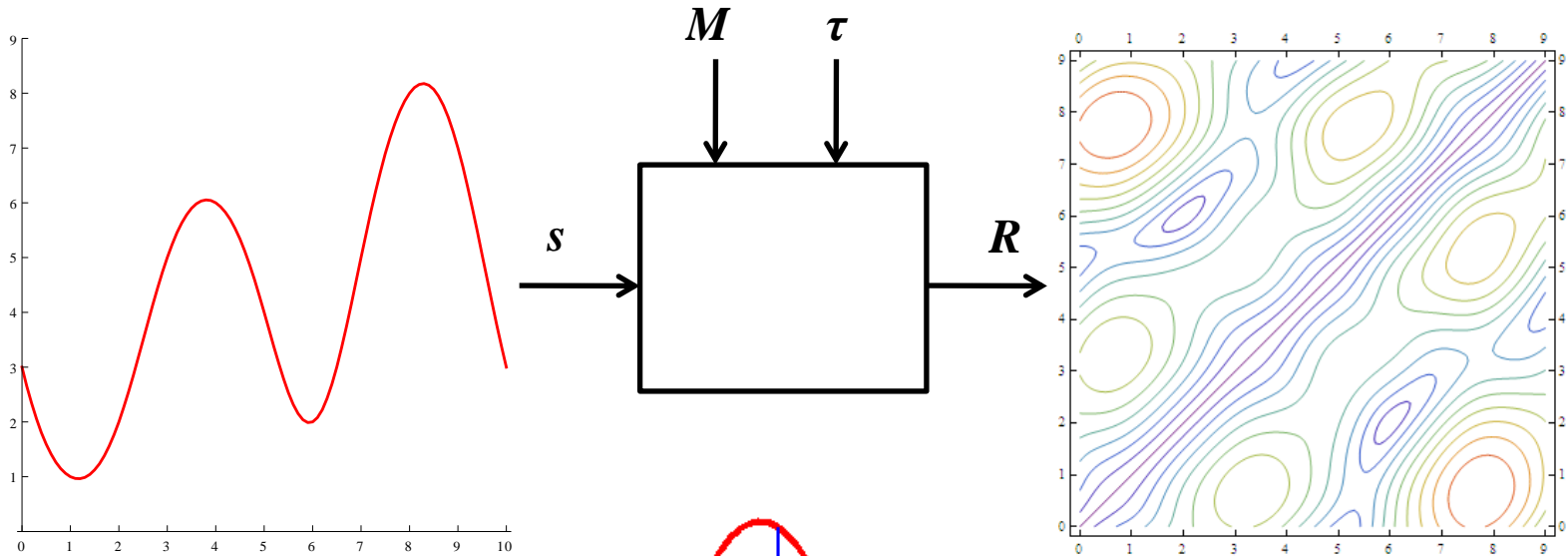
- *Mutual Information*
- ...

- *Power van een frequentieband*
- *Long Range Temporal Correlations*
- *Synchronization Likelihood*
- ...

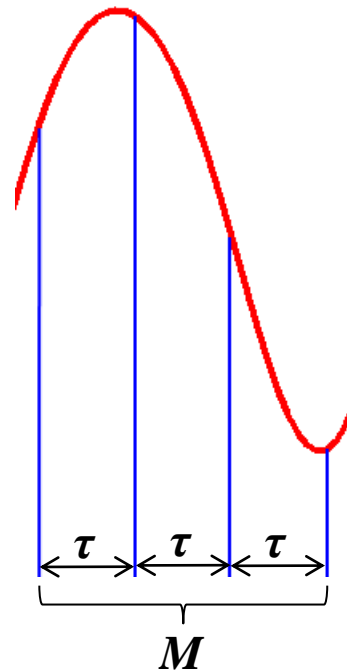


- *Afwijkingen detecteren*
- *Ziektebeelden onderscheiden*
- ...

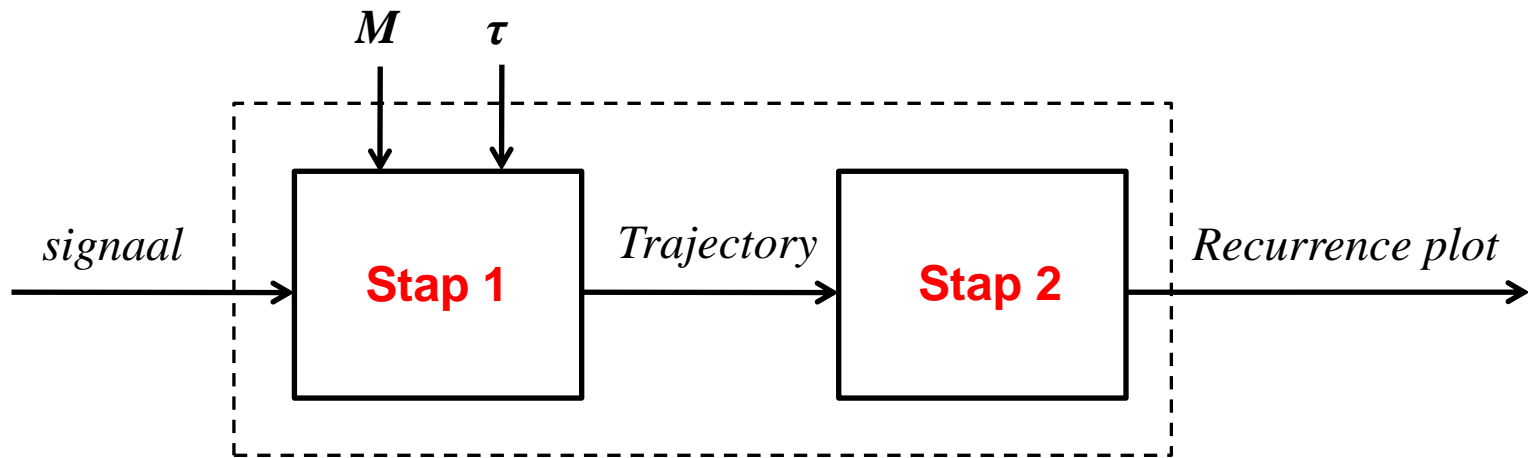
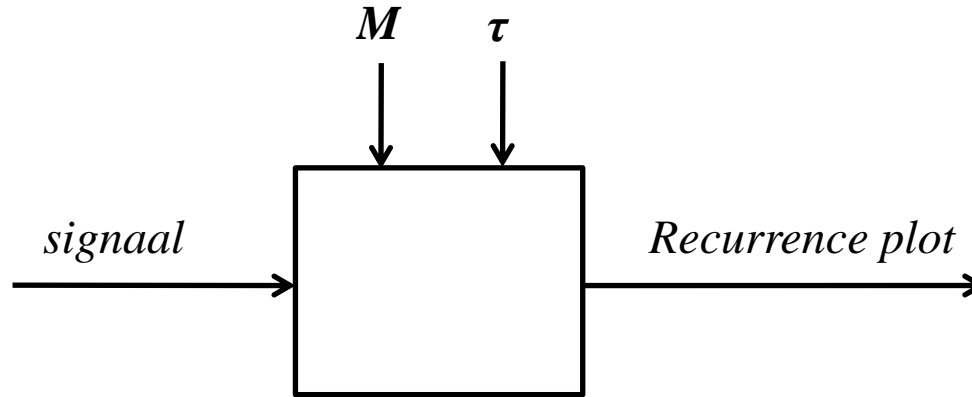
# Recurrence plot



Embedding dimension:  $M$   
Time delay:  $\tau$

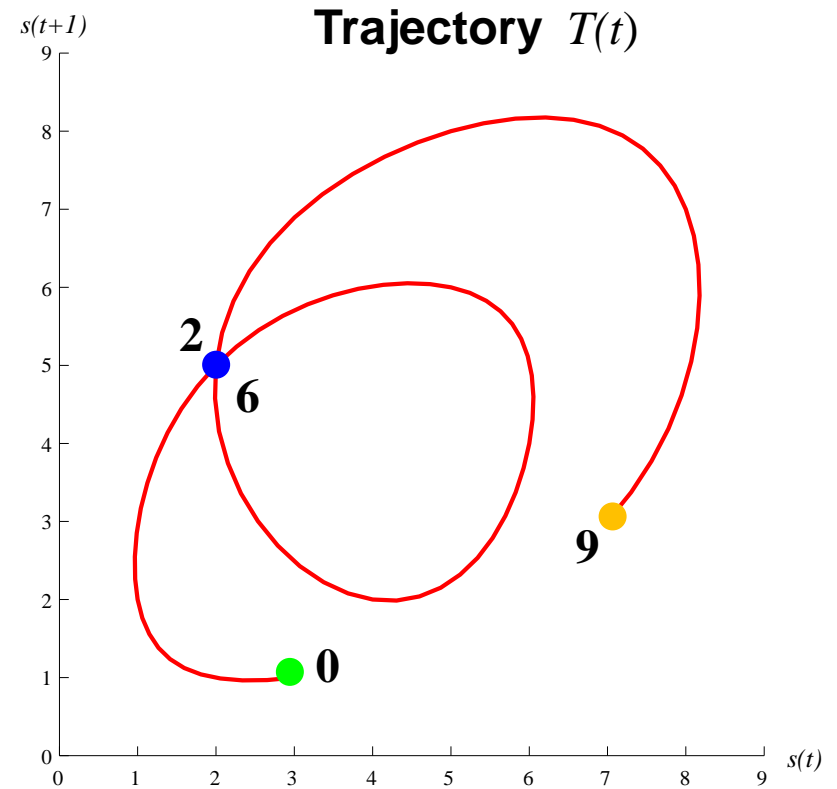
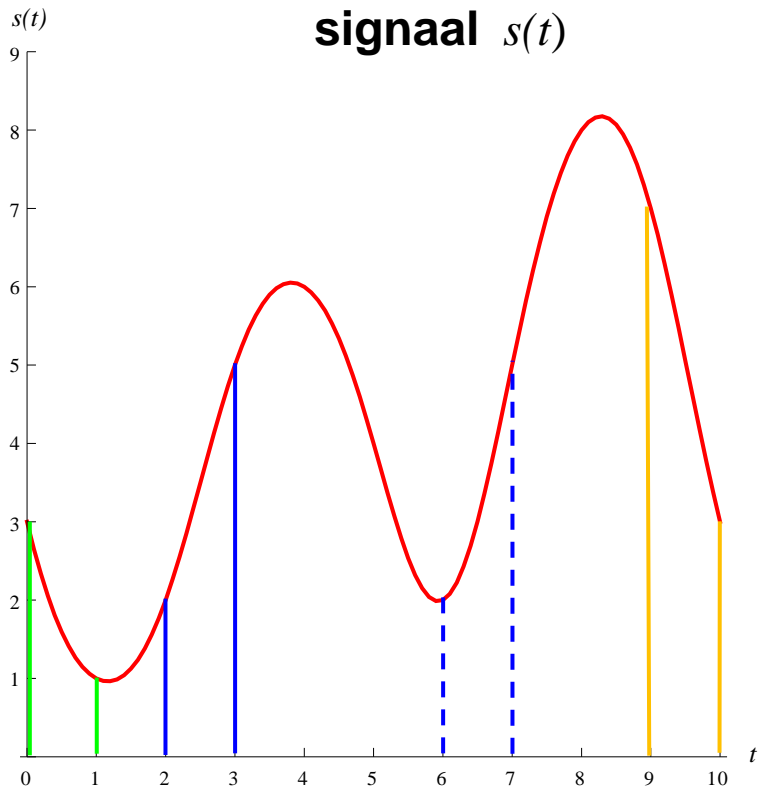


# Constructie in 2 stappen



# Van signaal naar Trajectory ( $M = 2, \tau = 1$ )

$$T(t) = \begin{pmatrix} s(t) \\ s(t+1) \end{pmatrix}$$

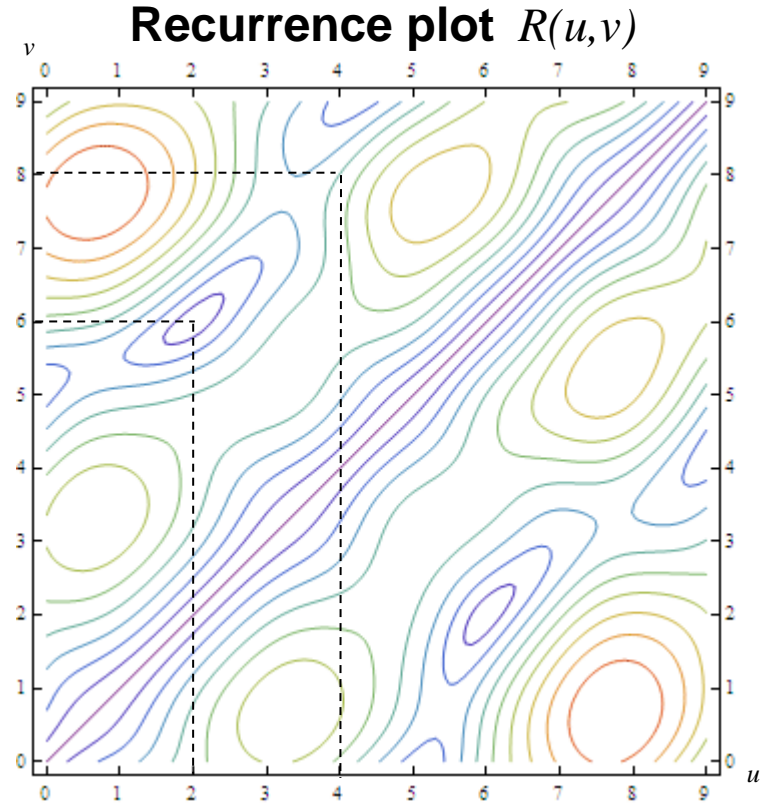
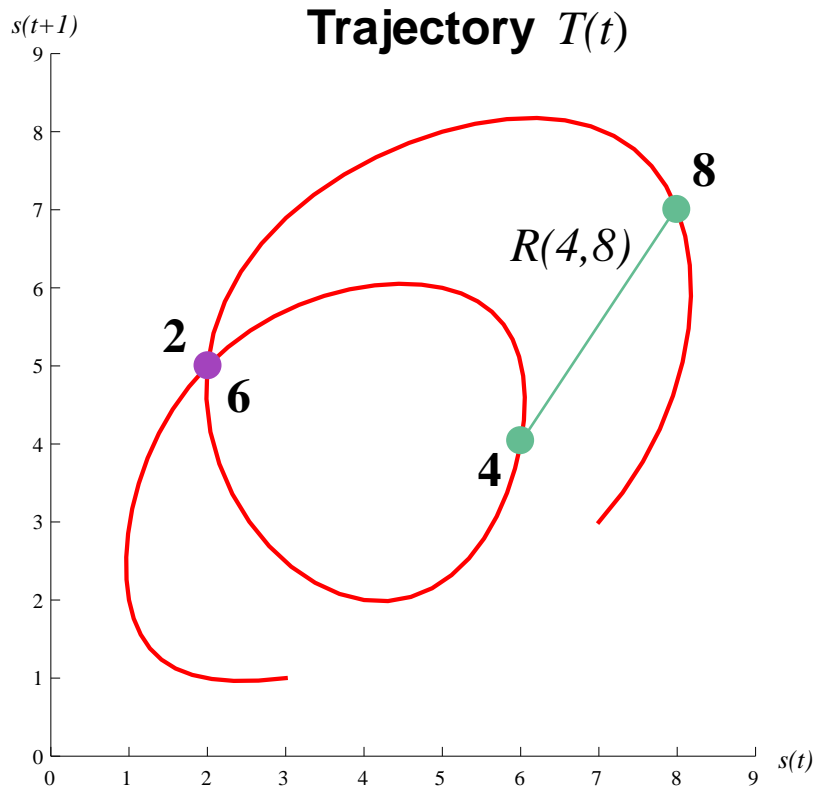


**Recurrence**

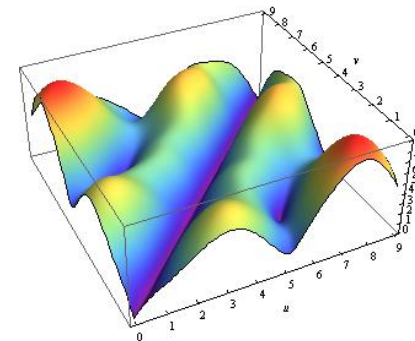
$$T(2) = T(6) = \begin{pmatrix} 2 \\ 5 \end{pmatrix}$$

# Van Trajectory naar Recurrence plot

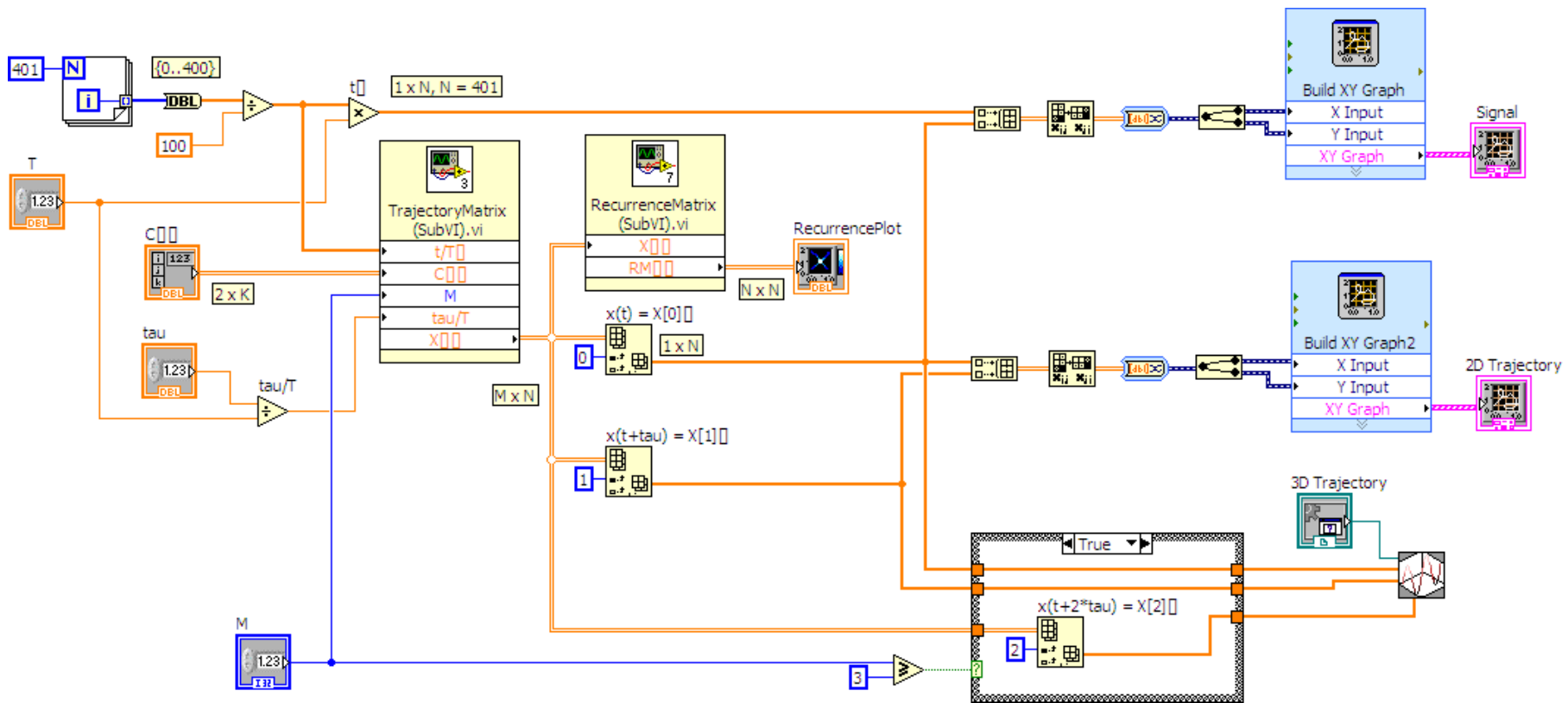
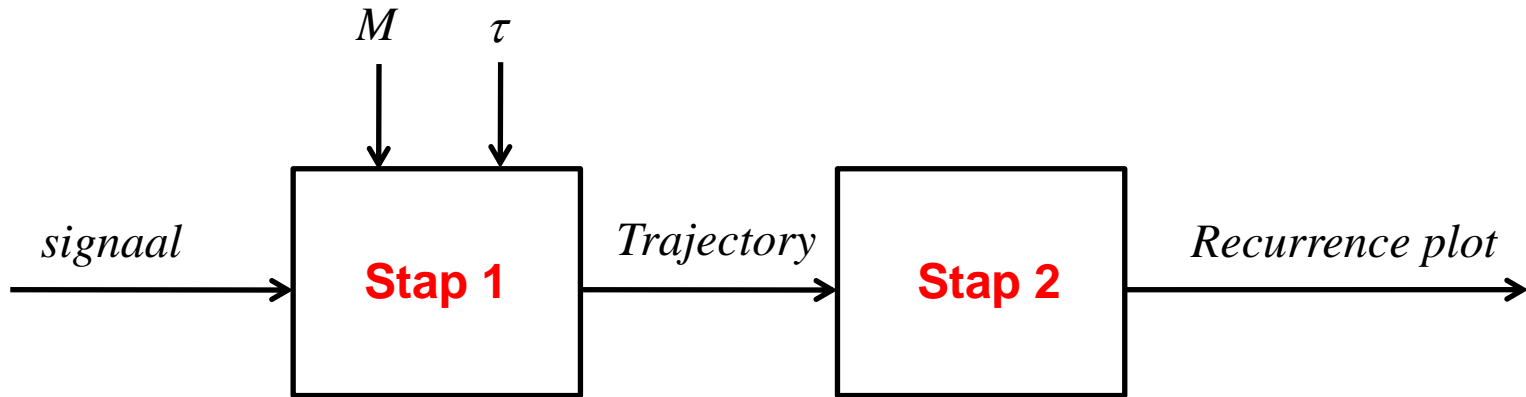
$$R(u, v) = \|T(u) - T(v)\|$$



**Recurrence**  
 $R(2,6) = 0$



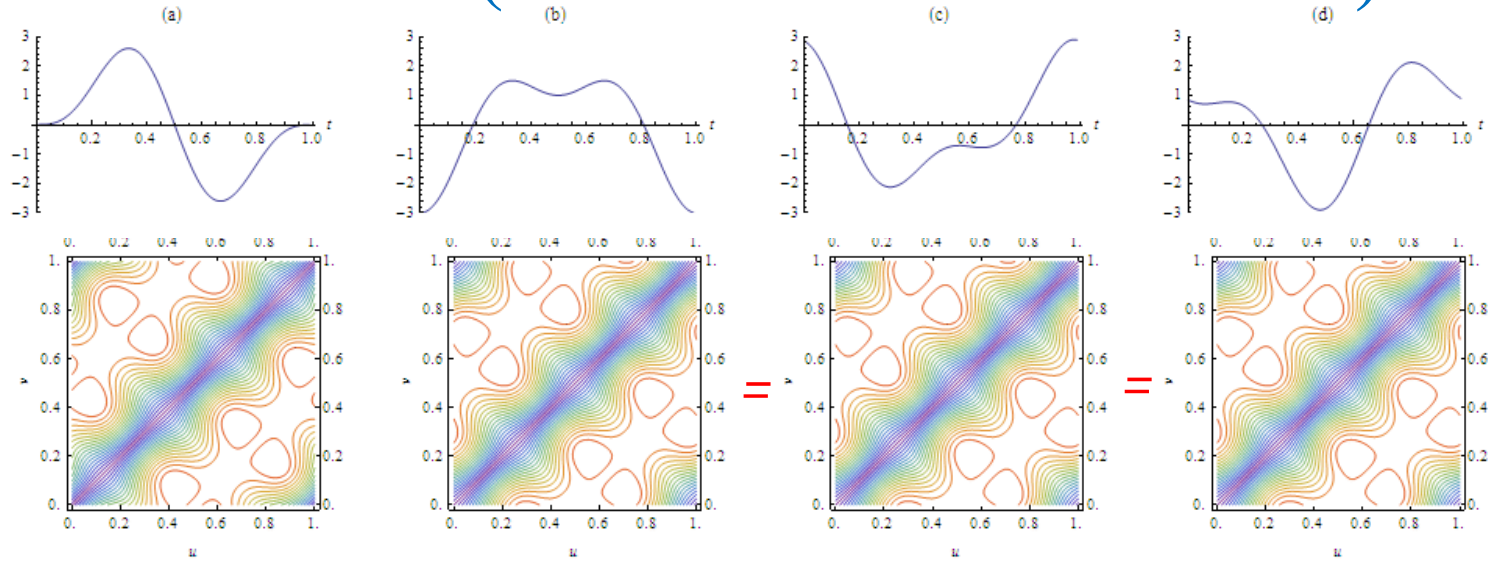
# Technische Informatica (Labview)



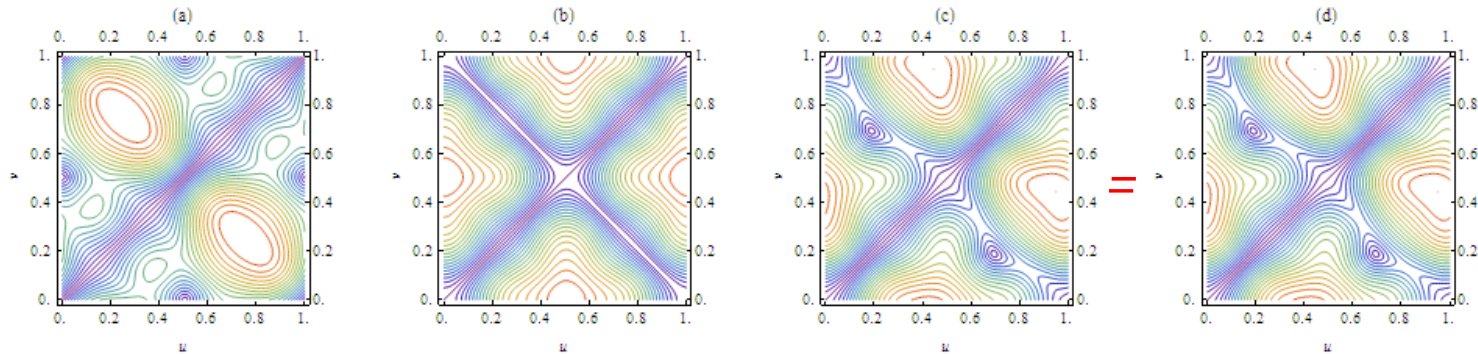


# Promotieonderzoek (Universiteit Maastricht)

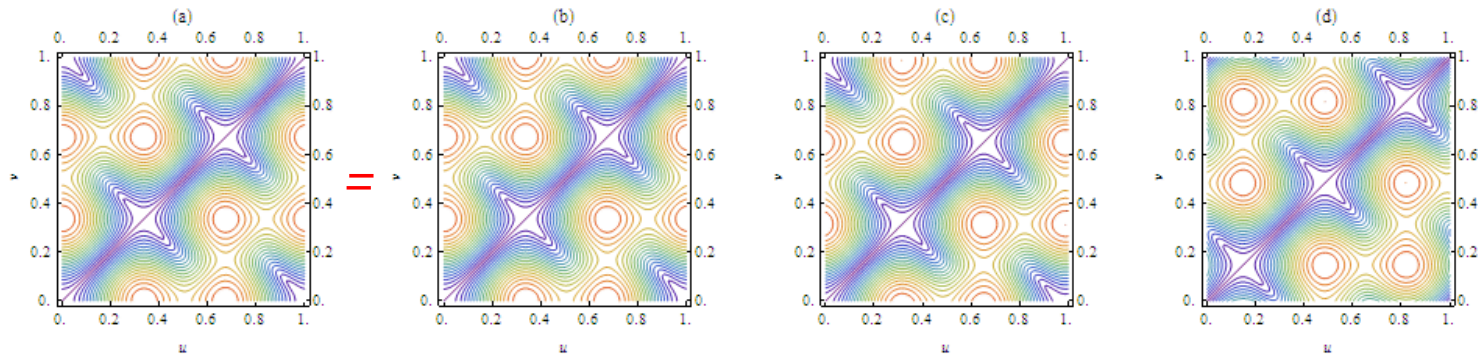
$M = 4$   
 $\tau = 1/4$



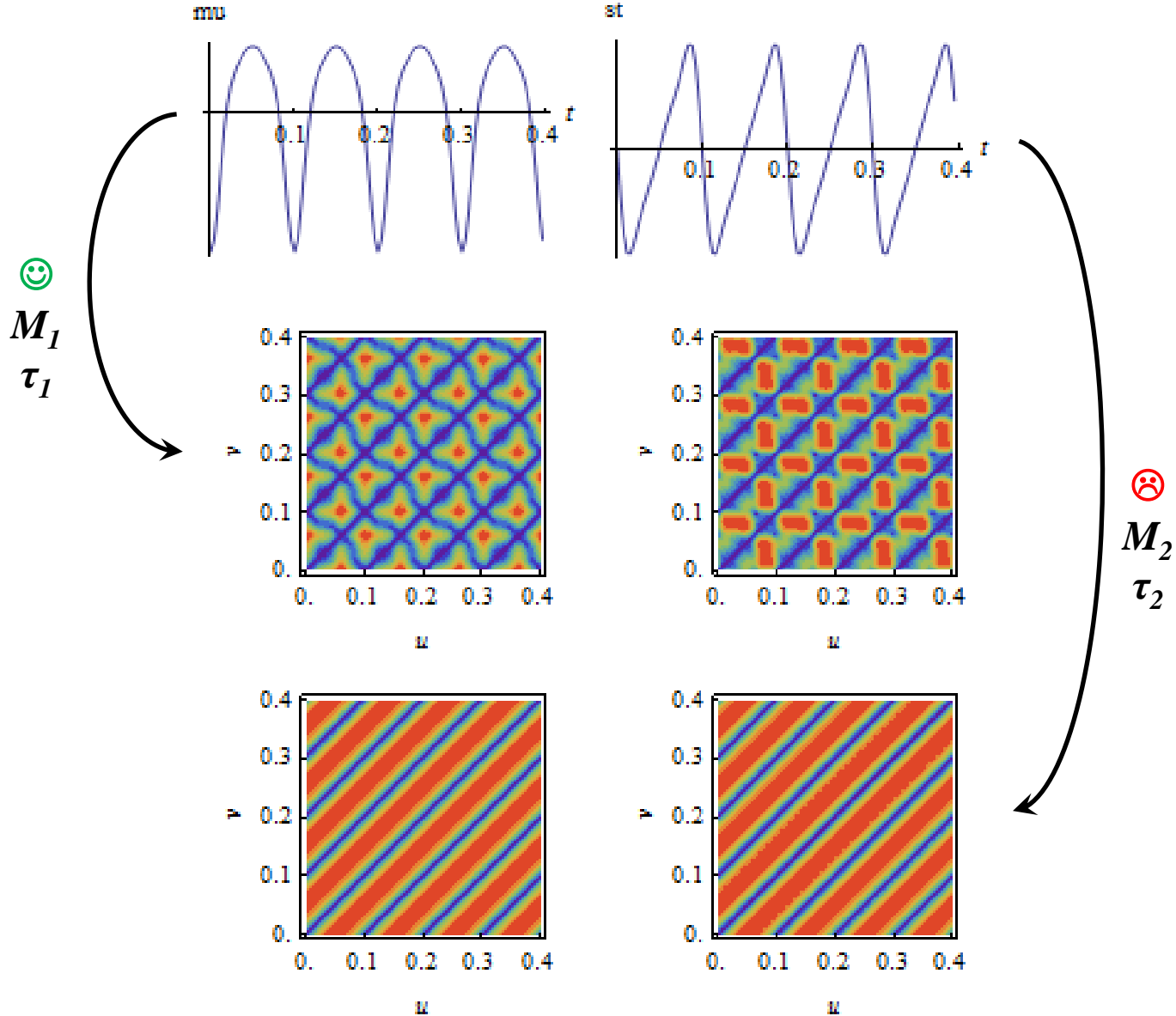
$M = 4$   
 $\tau = 1/2$



$M = 6$   
 $\tau = 1/3$



# ElectroEncephaloGraphy: Mu rhythm



# Samenvatting

1. Bio-Informatica

2.

3.

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