

Locomotor activity of the sand hopper *Talitrus saltator* (Crustacea, Amphipoda) from Zouarâa beach (Tunisia)



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Behavior theme:

- ➔ **Solar orientation**
- ➔ **Locomotor activity rhythm**
- ➔ **Spontaneous activity**

In this presentation:

- ➔ **Characterize the locomotor activity rhythm of Zouarâa population**
- ➔ **Compare the locomotor activity recorded under both experimental and natural conditions**

Locomotor activity rhythm



Recording chamber

Experimental protocol

- **Individual recording:** One animal per actograph

- **Two weeks experiment:**

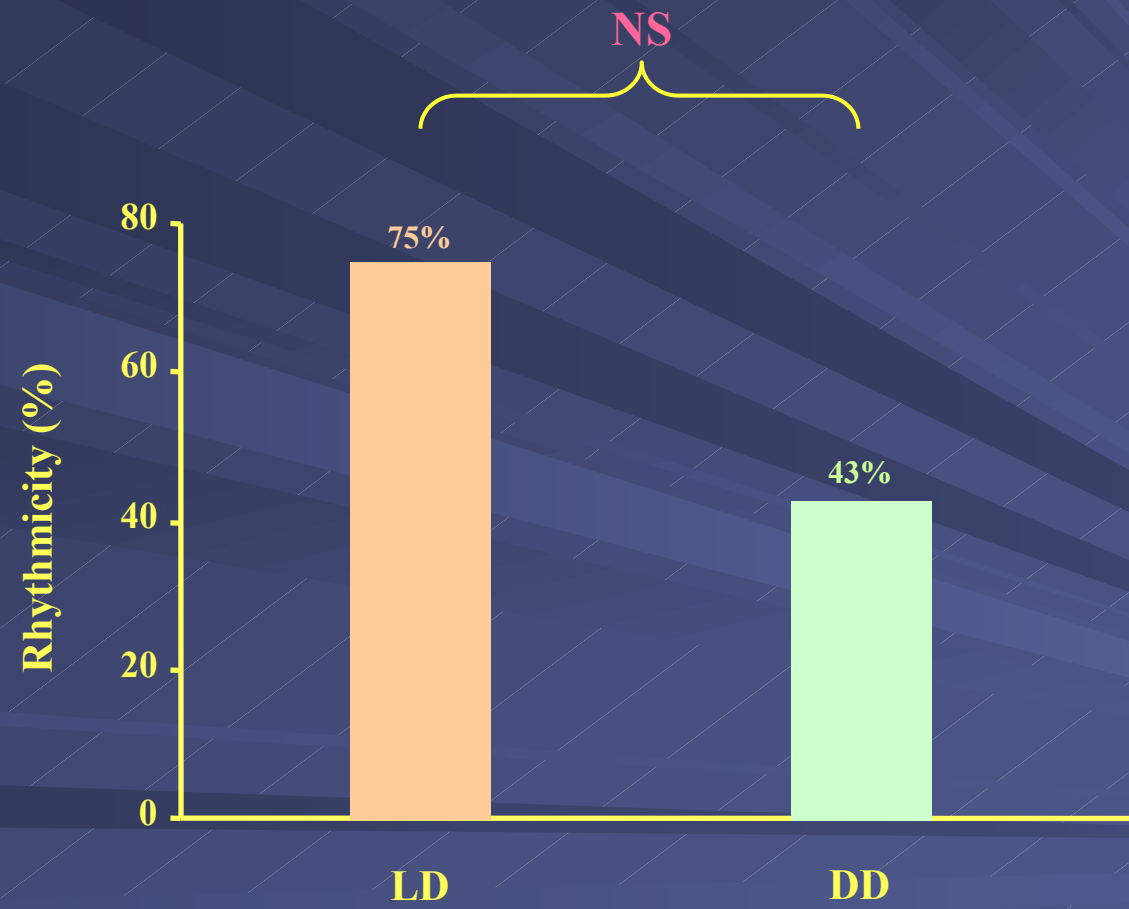


First week (LD): animals were kept in light-dark regiment approximating to that of the day of collection

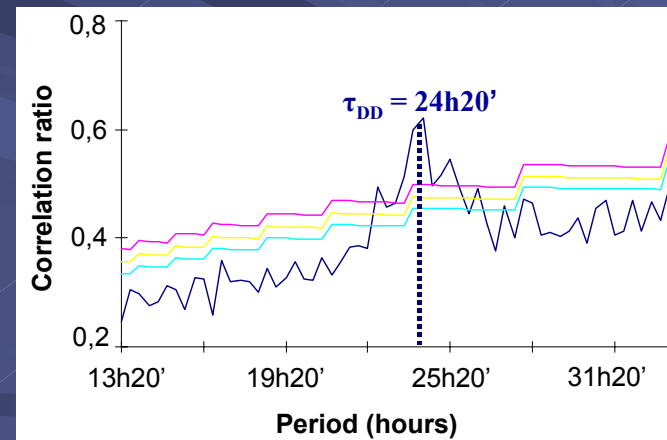
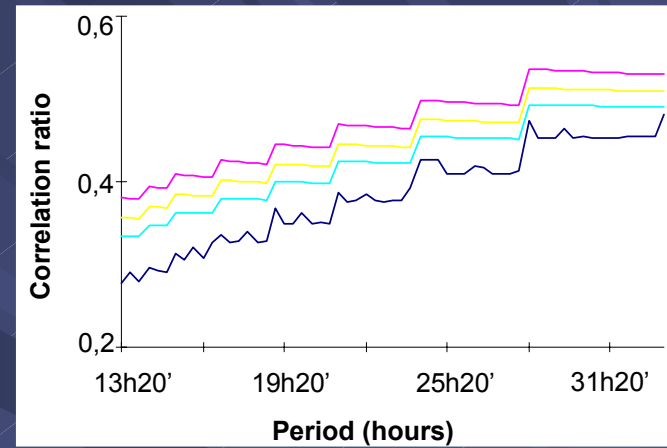
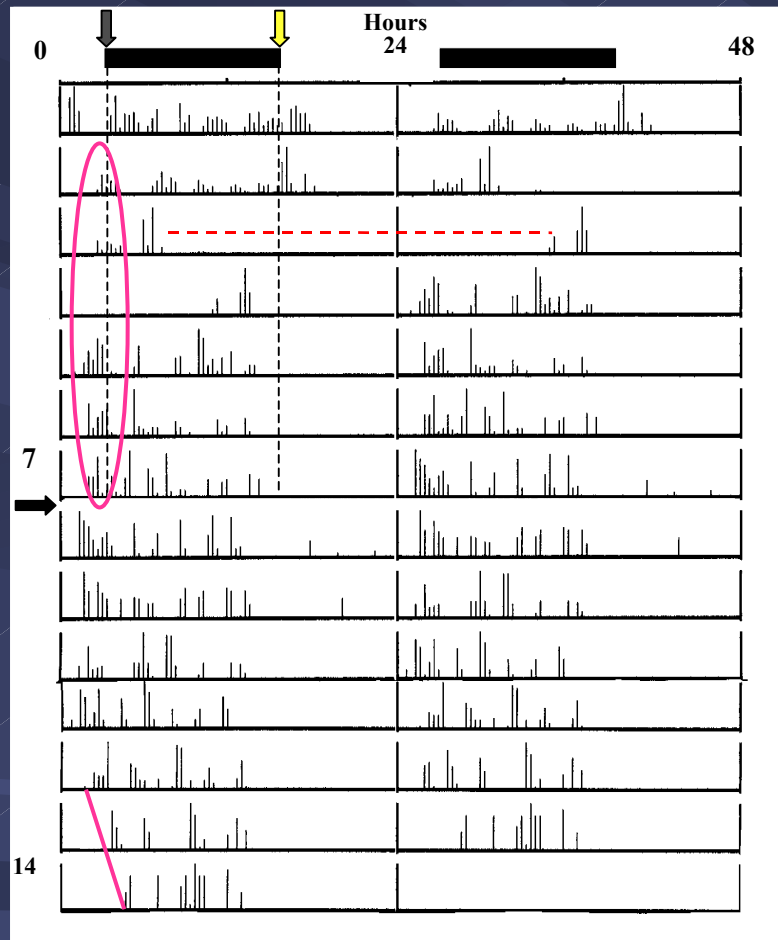


Second week (DD): the animals were kept in constant darkness

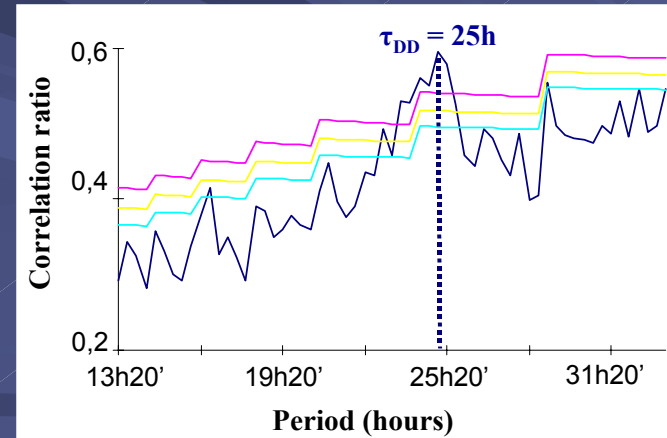
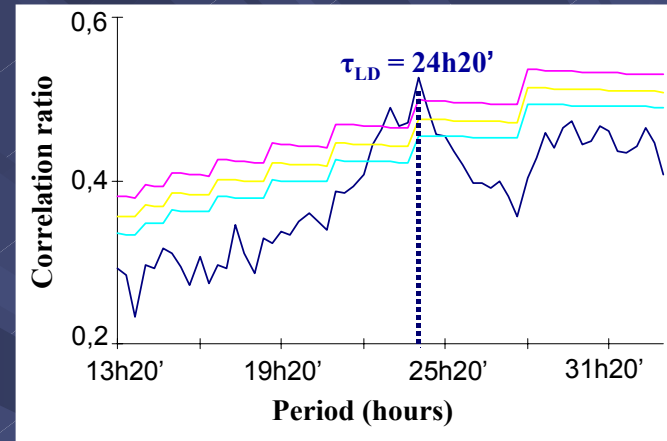
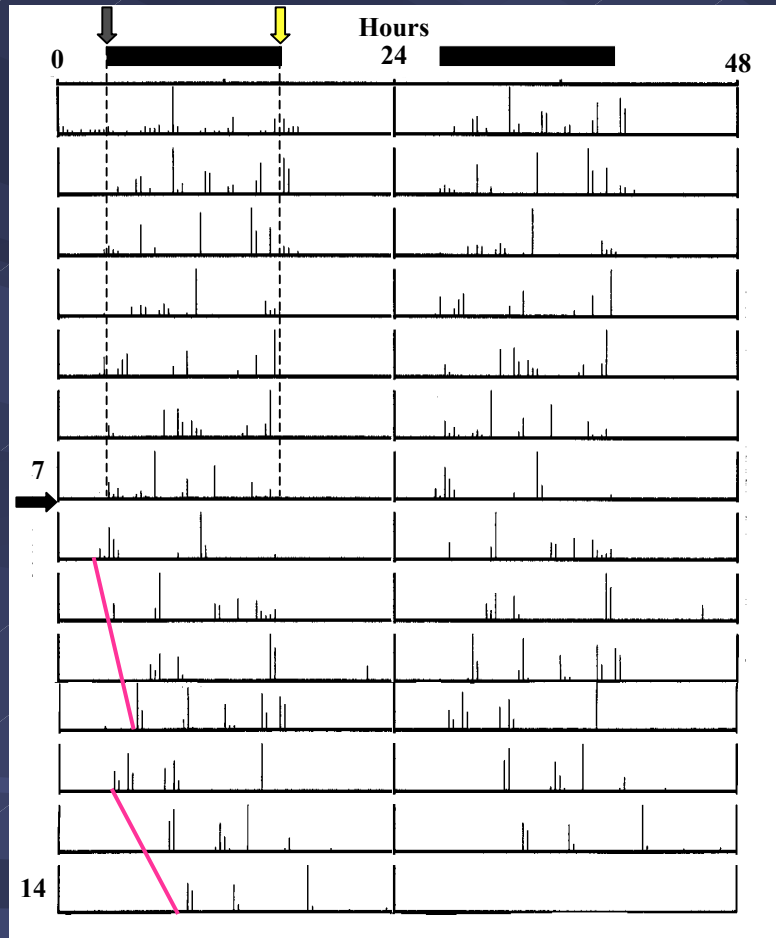
Rhythmicity



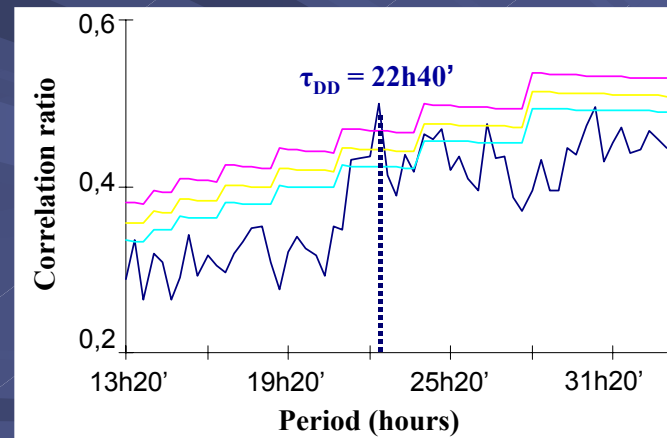
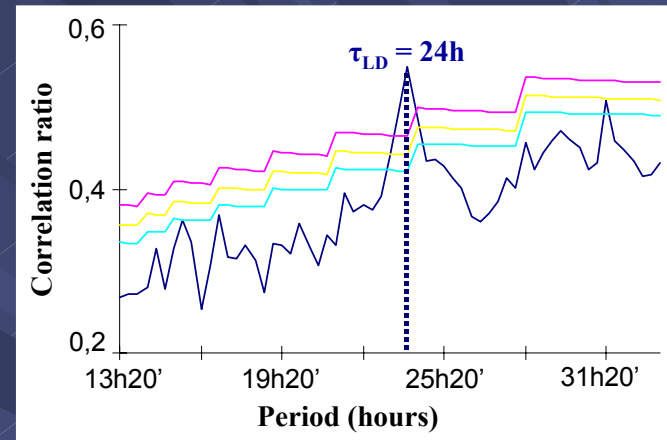
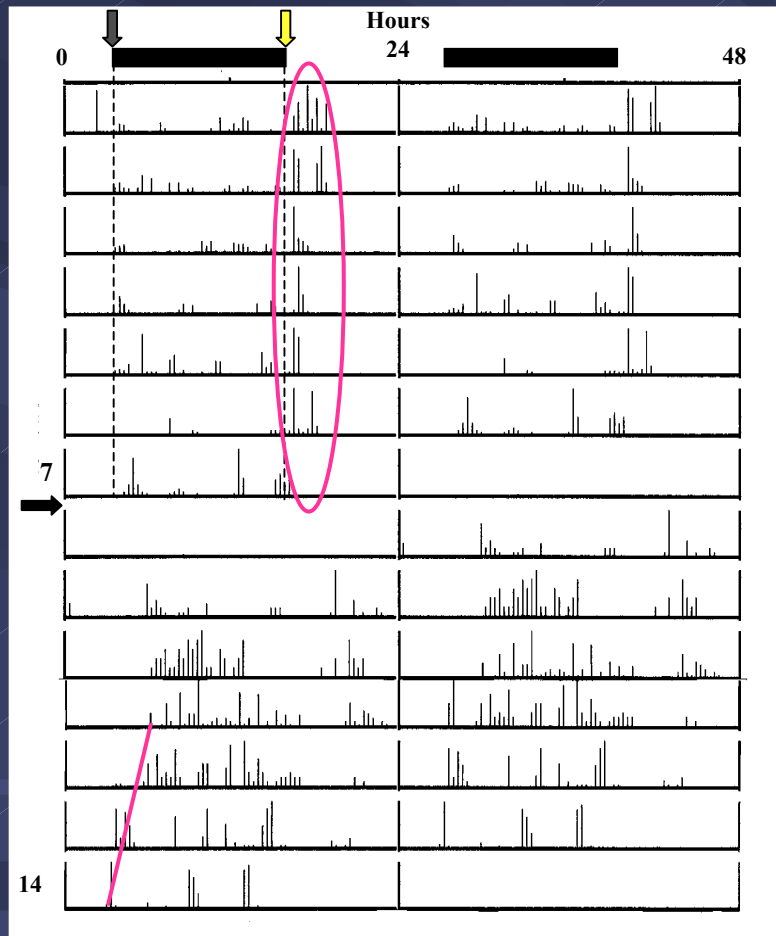
The least frequent pattern observed in 6,2% of the global sample



The most frequent pattern observed in 56,3% of the global sample



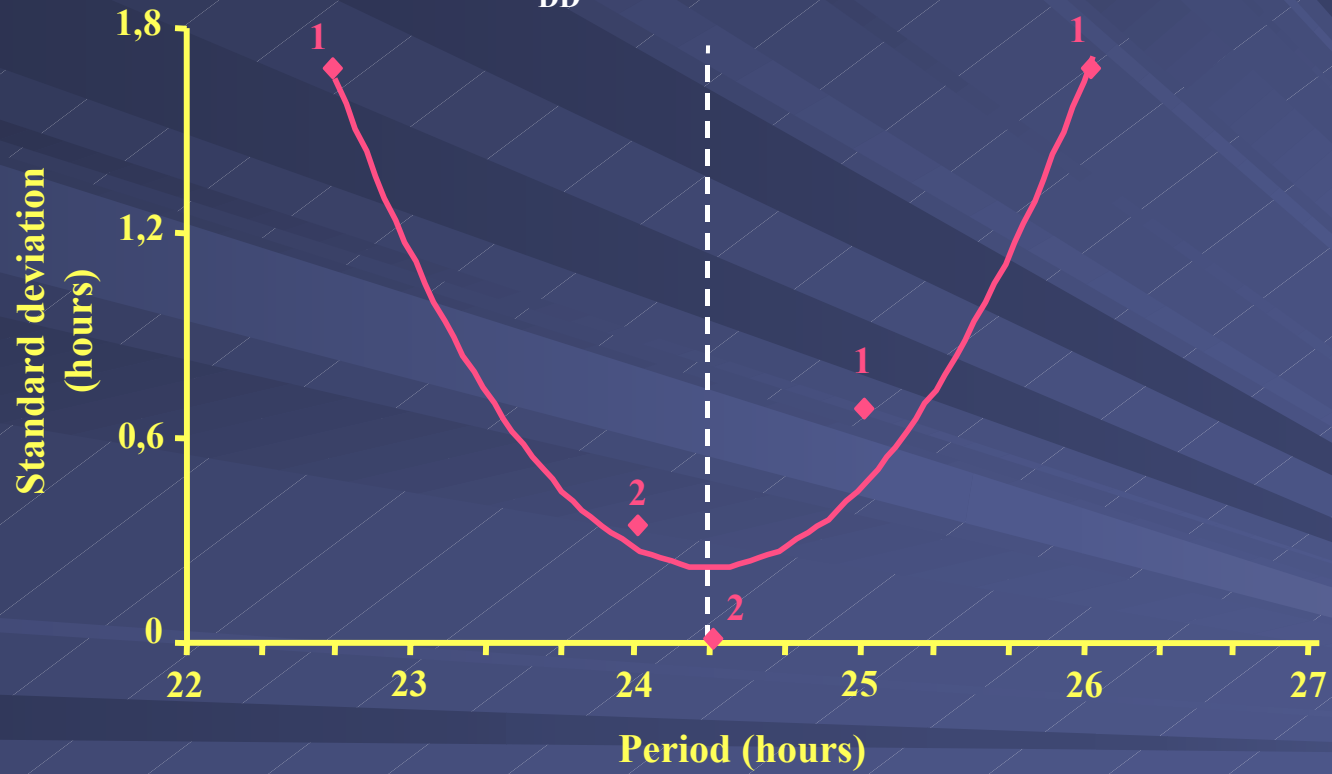
The third pattern observed in 37,5% of the global sample

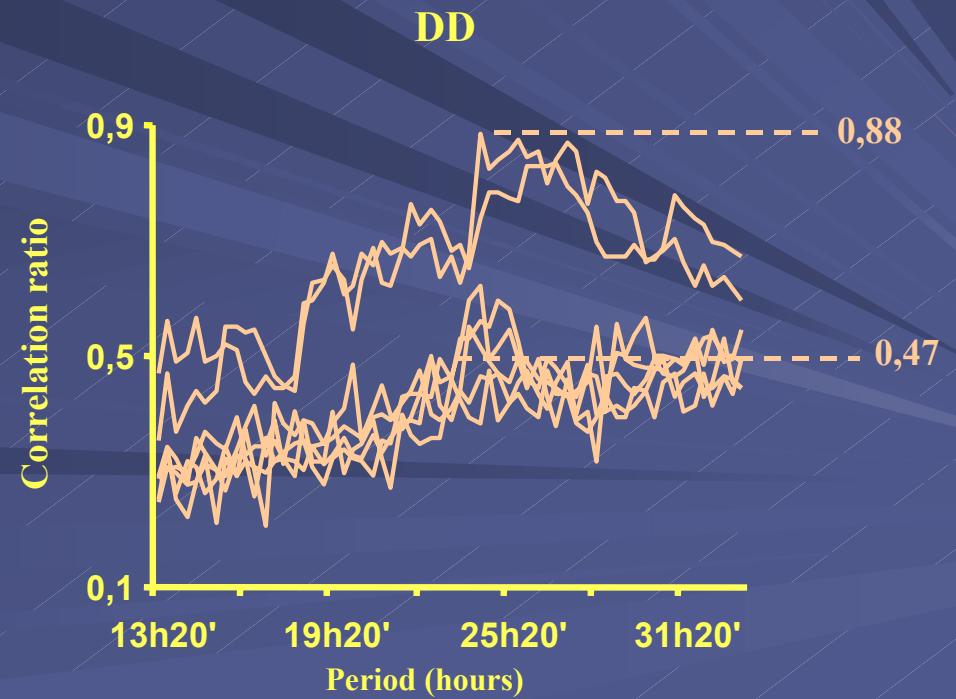
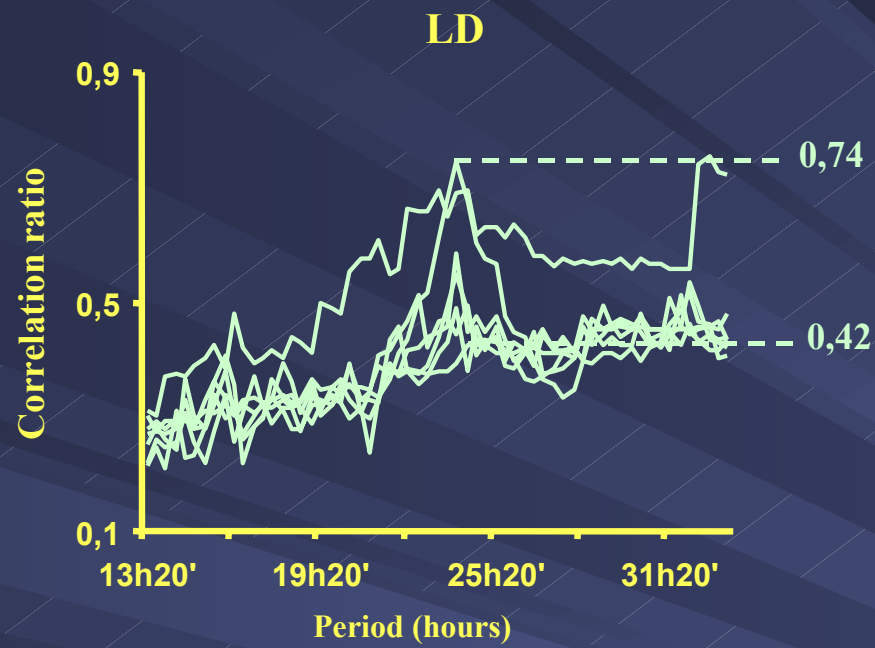


Standard deviation

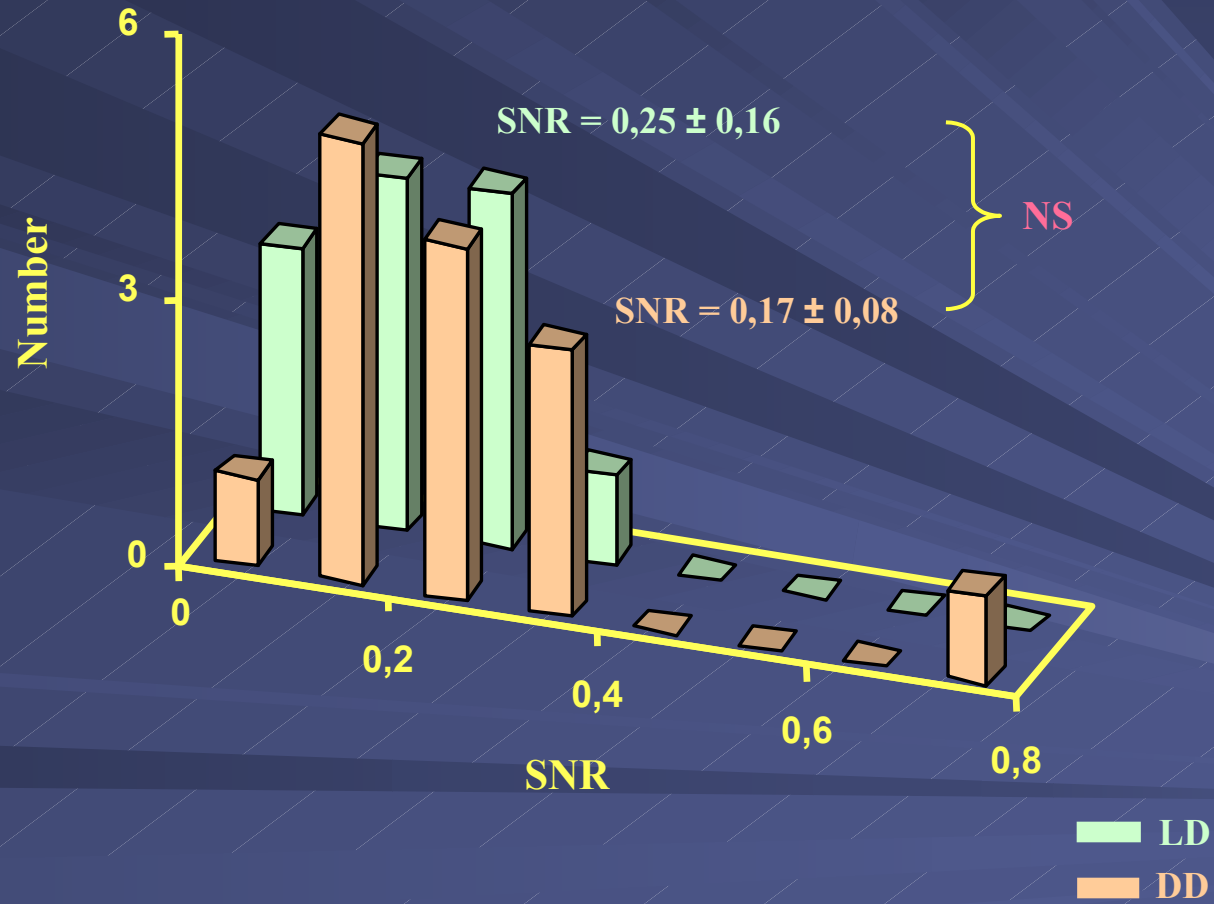
$$Sd = \bar{\tau}_{DD} - \tau_{DD}$$

$$\bar{\tau}_{DD} = 24h20' \pm 1h02'$$

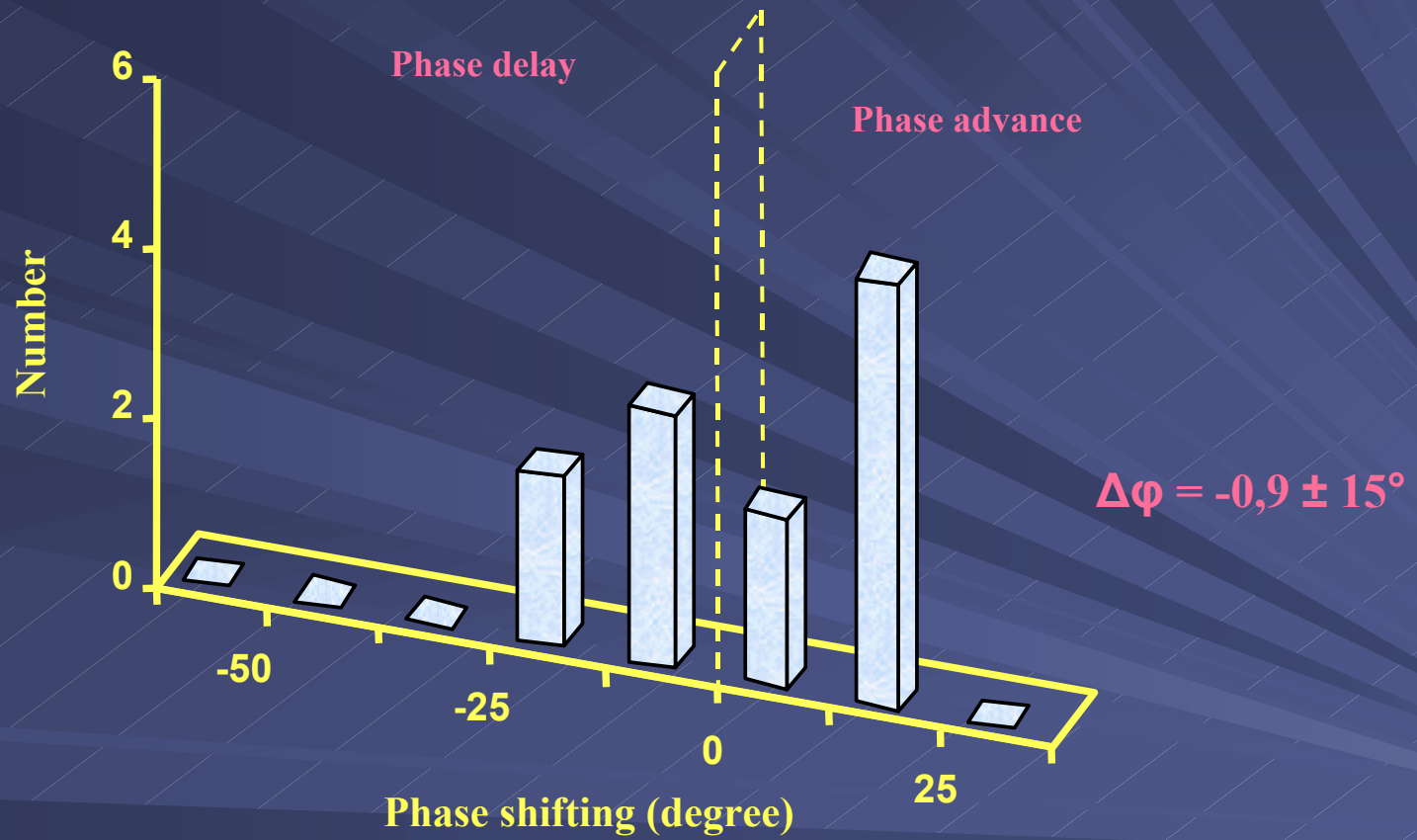




Signal Noise Ratio



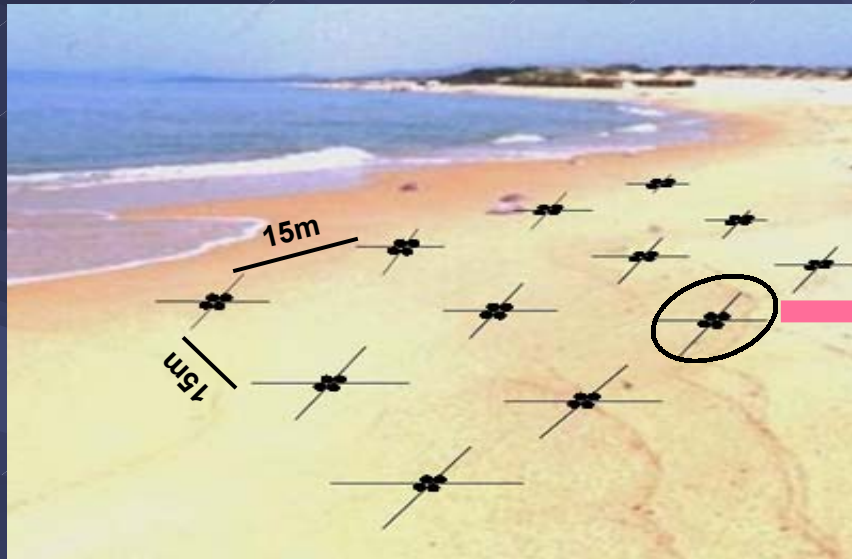
Phase angle: $\Delta\varphi$





**Spontaneous activity and
spatial distribution**

Experimental protocol

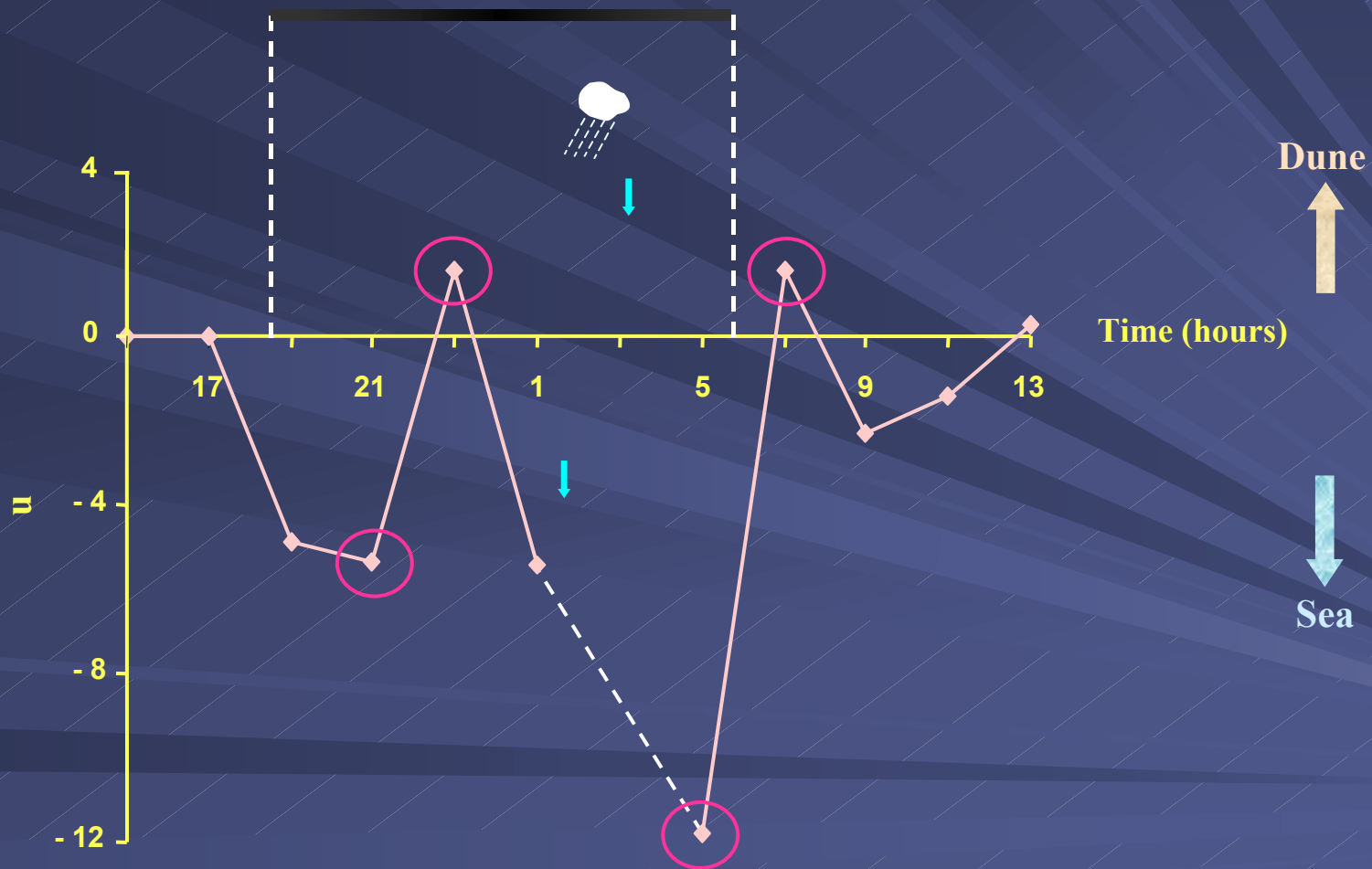


A cross pit-fall trap

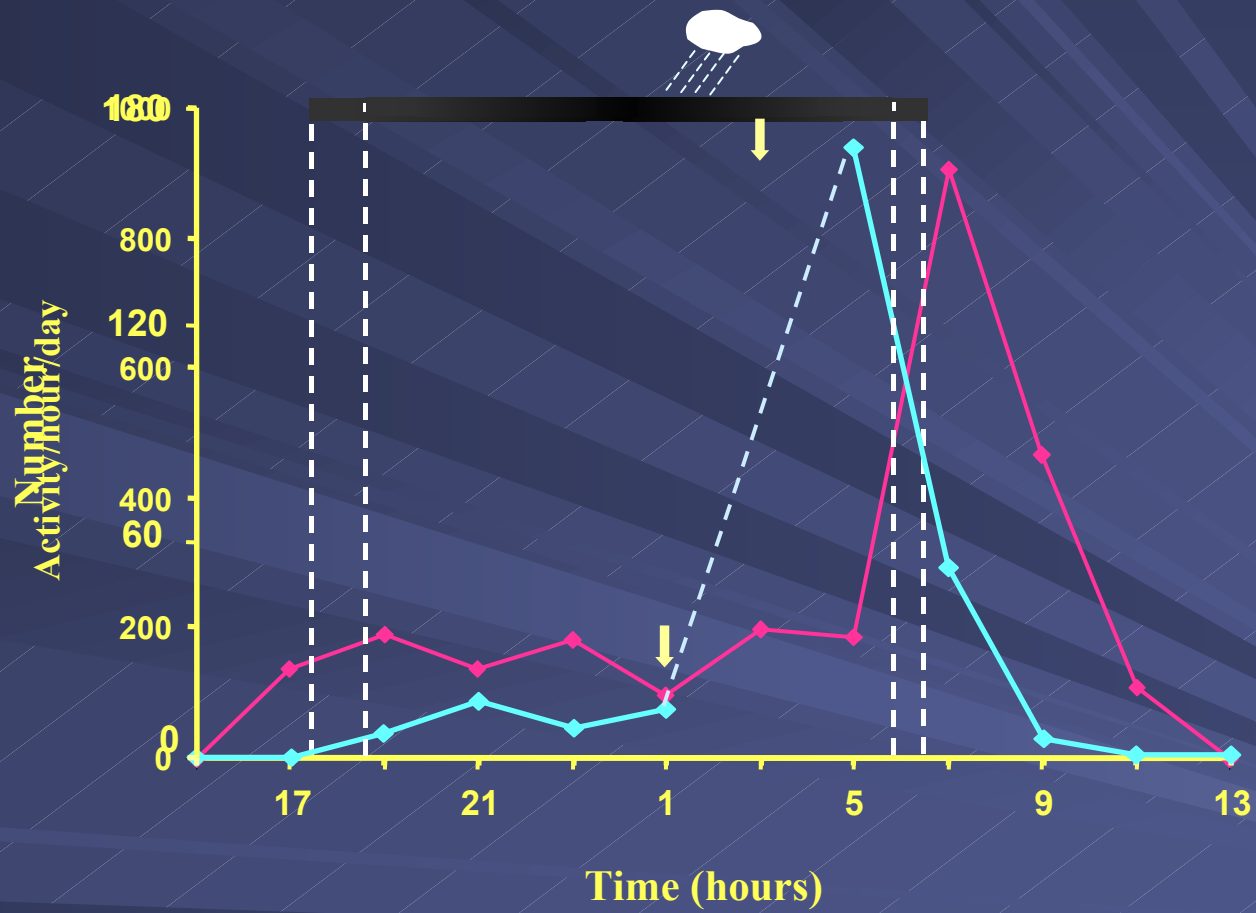
Animals collect happens every 2h during 24h

Circular statistics (Batschelett 1981) define the direction of the migration

Spatial distribution



Spontaneous activity and waveform



The day to day stability of the locomotor rhythm under the nLD cycle and the drift of the activity under free-running condition



The nLD cycle is the most important synchronizer of the locomotor activity rhythm

No differences were observed between the locomotor activity recorded under both experimental and natural conditions.

Zouarâa population have shown:

- more rhythmic animals**
- less stable locomotor activity rhythm**