## **Study of the Sequential nature in** neuronal dynamics **Technique to study it Case of study CW-NIR Infrared laser Feeding CPG** Single neurons in RPG Lymnaea stagnalis Lymnaea stagnalis **Computational approach Experimental approach Activity-dependent protocol Sustained illumination** N1 Burst Duration N3 Burst Duration $R^2 = 0.0343$ **Presence of** dynamical invariants Intracelular under different cases of stimulation NIR CW laser .든 0.65 -등 0.60 -**Universality of** Ganglia from Lymnaea stagnalis sequential dynamical and spike prediction invariants Sutained laser stimulation accelerates the Neural activity action potential With the activity dependent protocol we could assess the action potential sequential generation at different time instants **Transformation of sequential intervals** Importance of reproducing the duration into effective robot movement depolarization slope functional variability in repolarization slope computational models No candidate alone in the model could reproduce the Light sensory feedback from FLC-Hybrot to living circuit effect, execept of the temperature dependency Aligned spikes (-60, -40] (-40, -20] (-20, 0] (0, 20] (20, 40] Time from illumination offset to spike peak (ms) The closed-loop protocol unveiled the CW-laser effect at different phases of the neuron dynamics, shifting the maximum effect at Robot legs oscillation different spike generation times