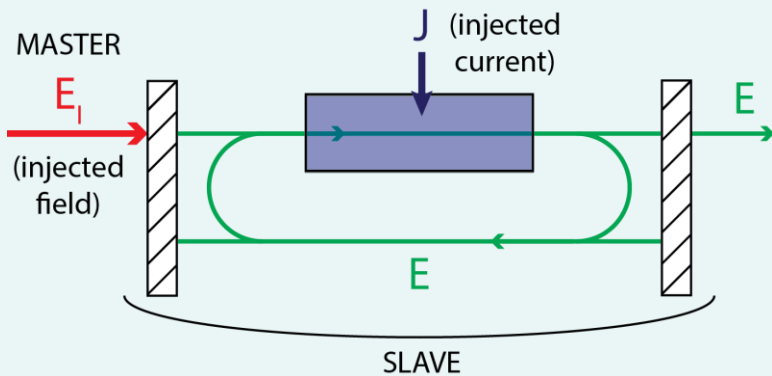
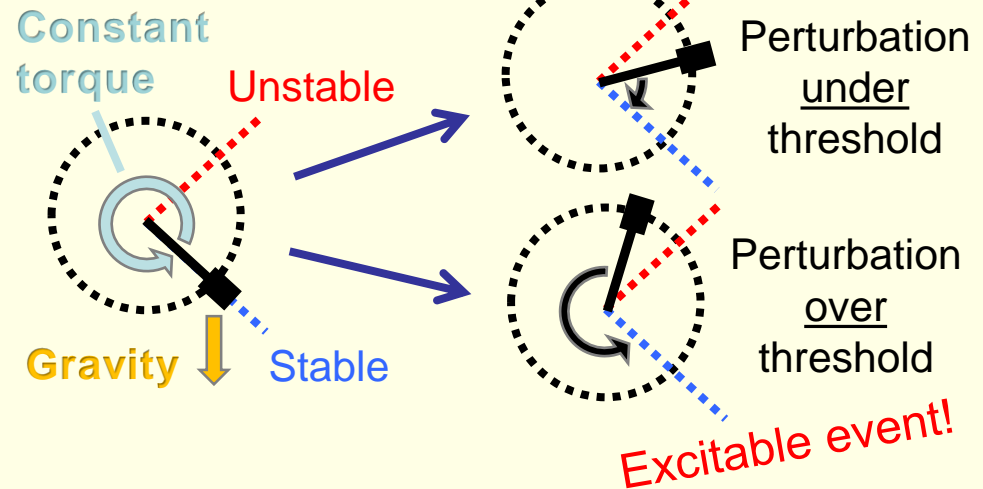


1. Introduction to the optical system

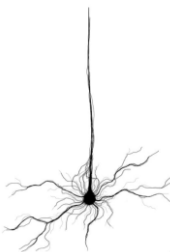
The system under study is that of a laser with optical injection



We can compare it to an overdamped pendulum with constant torque



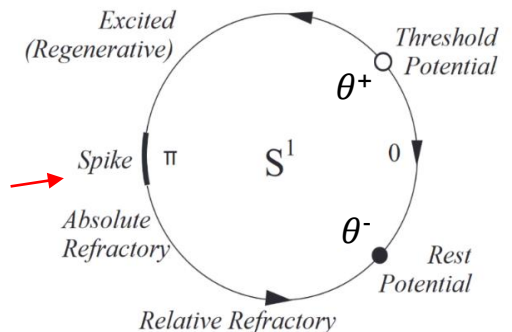
2. Analogy with neurons



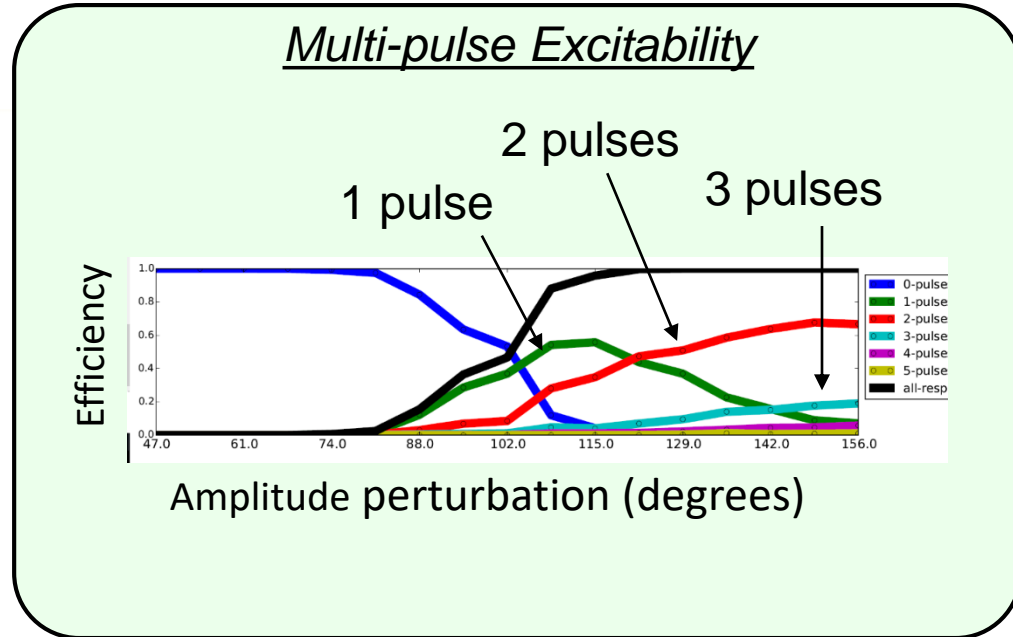
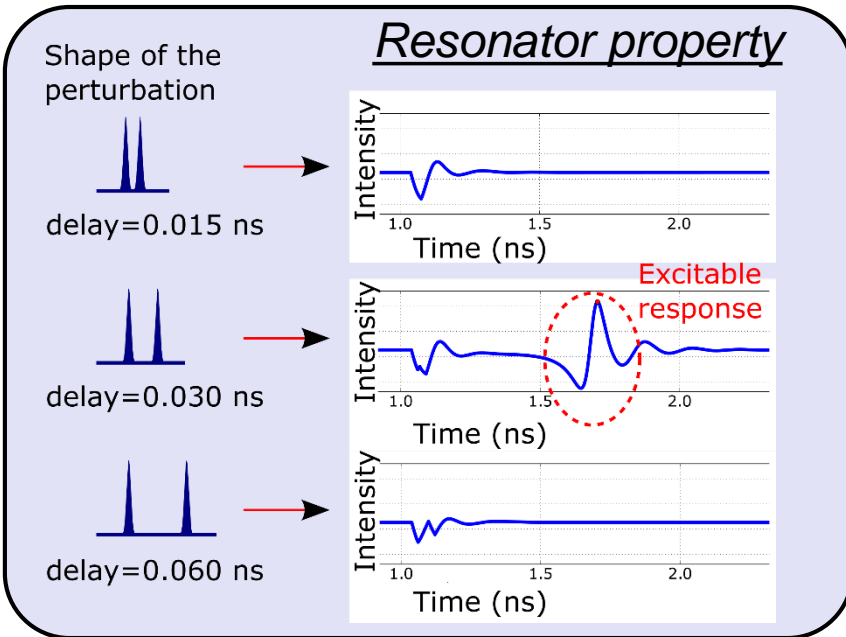
CLASS 1 Neurons: ***theta model***

$$\frac{d\theta}{dt} = 1 - \cos \theta + (1 + \cos \theta)I(t)$$

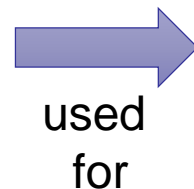
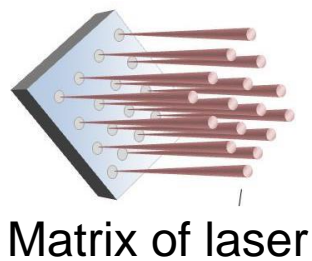
When $\theta = \pi$, the neuron spikes



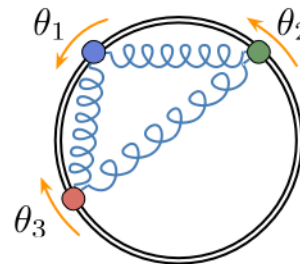
3. Properties of the system



4. Future developments



Coupled oscillators



Spiking neural network

