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# Abrupt transitions from low to high firing frequencies in neurons and neuronal networks

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## Poster Session

**Title:** Abrupt transitions from low to high firing frequencies in neurons and neuronal networks

**Abstract:** What conditions lead to runaway activity in neuronal networks with recurrent excitation? We examine this question by analytically and numerically analyzing the parameters in the theta neuron with self-excitation, the LIF neuron with self-excitation and self-inhibition, the reduced Traub-Miles neuron with recurrent self-excitation, and the PING network model with NMDA and AMPA synapses. We find minimum requirements needed to create a “bump” mechanism whereby sudden transitions from low firing frequency to runaway activity can occur.