



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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A Two Compartment Leaky Integrate and Fire Model for Single  
Pyramidal Neurons

WEDNESDAY, May 13, 2015, at 9:30 AM  
Eckhart 110, 5734 S. University Avenue

ABSTRACT

We investigate a two compartment Leaky Integrate and Fire (LIF) model for Layer 5 (L5) pyramidal neurons and characterize its input-output relation under both constant and stochastic inputs. Under constant input, the model incorporates backpropagation-activated coupling (BAC ring) by the reset mechanisms in the soma and dendrite compartments. The ring rate is approximated using level-crossing statistics for stochastic inputs when the ring frequency is low.

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