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Conferenza

The role of spike timing in cortical coding of somatosensory stimuli

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In this talk I will present my analysis (performed in collaboration with the laboratory of Mathew Diamond) on the role of spike timing in somatosensory cortical processing. We used an information-theoretic analysis of simultaneously recorded neurons in S1 cortex of rats in response to increasingly complex patterns of whisker stimulation.

We found that millisecond-precise spike timing was important in coding of all type of stimuli, and that the timing of the first post-stimulus spike carried a large fraction of the total information transmitted by the population in each case. When using simple whisker stimuli, the first spike was the only spike response variable carrying information.

However, when using more complex stimuli, later spikes also carried some information that was non-redundant to that provided by the first spike. This suggests that cortex uses more complex strategies to code for richer stimuli.