

COLLOQUIUM

Understanding Information: From Bits to Brains

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Abstract: Information is the currency of the modern era, and there are surprising similarities in data processing and representation between computer systems and neuroscience. In the first half of this talk, I will discuss how to dynamically identify related blocks or files in trace data and use the resulting data groups to make information storage more efficient and robust. From there, I will discuss how the classical systems metrics of reliability, performance, and availability apply to biologically plausible neural networks, including recent work exploring the balance between classification accuracy and robustness. Finally, I will show how computational models from vision can be applied to understand information flow in the visual cortex, and how algebraic topology is a promising method to classify neurons by network function and categorize visual stimuli.

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Mathematics and Science Center: W303

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