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NORTHWESTERN
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**Northwestern Institute on Complex Systems
invites you to its
Weekly Seminar**



Speaker: John Beggs, Assistant Professor, Department of Physics,
Biocomplexity Institute, Indiana University

Title: The criticality hypothesis: How local cortical networks might
optimize information processing

When: Wednesday, February 28, 2007

Where: Chambers Hall, 600 Foster Street, Lower Classroom Level

Time: 12:00 – 1:00

NICO Coffee Hour will follow for questions, networking, and collaboration

Abstract

Several models suggest that neural networks should operate near a critical point to optimize information transmission, information storage, computational power, and stability. To test this, we recorded cortical slices and cultures on 60-channel and 512-channel multielectrode arrays. Networks produced avalanches of spikes and local field potentials whose sizes were distributed according to a power law, reminiscent of critical phenomena. Moreover, some avalanches occurred in precisely repeating patterns that could be used to store information. These data are consistent with the criticality hypothesis.

References

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