



The University of Chicago

Department of Statistics

Seminar Series

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Brain Rhythms in Sickness and in Health

MONDAY, February 9, 2009 at 4:00 PM
133 Eckhart Hall, 5734 S. University Avenue

Refreshments following the seminar in Eckhart 110.

ABSTRACT

Rhythmic oscillations in brain voltage activity characterize both healthy and pathological brain states. In this presentation, we explore how mathematical techniques serve a vital role in quantifying these rhythms and unraveling their mechanisms. We start by considering a particular brain pathology — epilepsy — and show how the quantitative analysis of voltage rhythms may suggest novel surgical therapies. We then describe brain voltage rhythms in health, and show how detailed experiments combined with computational modeling suggests a novel mechanism of rhythm generation: period concatenation. We conclude with a discussion of interacting rhythms, and show how a simple (yet biophysical) model of these rhythms motivates novel mathematics.

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