

SIMCA COLLOQUIUM

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110 Maryland Hall
4:00 p.m.

**MEASURING PERIODICITY IN GENE EXPRESSION
WITH PERSISTENCE**

ABSTRACT

The work presented in this talk is motivated by microarray experiments aimed at illuminating gene regulation in embryonic somite development. This development is approximately periodic, generating one somite at a time. The microarray experiment yields a one-dimensional function representing expression per gene. We measure the extent to which a function follows the same periodic pattern and is a candidate in participating in the process. To this end we simplify functions, integrate numbers of critical points, and prove the stability of the resulting measure. We evaluate the resulting rankings based on genes for which there is biological evidence of their direct involvement in somite development.

(This is joint work with Mary-Lee Dequeant, Yuriy Mileyko, and Olivier Pourquie.)

Professor Edelsbrunner will give a second lecture, sponsored by the Department of Mathematics, on Friday, September 22 at 12:00 noon in 302 Krieger Hall. The title of his second lecture is “Persistence and Extended Persistence.”