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Research Letters in Signal Processing  
Volume 2008 (2008), Article ID 825758, 5 pages  
doi:10.1155/2008/825758

## Research Letter

## Singular Spectrum Analysis of Gene Expression Profiles of Early *Drosophila embryo*: Exponential-in-Distance Patterns

T. Alexandrov,<sup>1</sup> N. Golyandina,<sup>2</sup> and A. Spirov<sup>3</sup>

<sup>1</sup>Center for Industrial Mathematics, Department of Mathematics, University of Bremen, 28334 Bremen, Germany

<sup>2</sup>Department of Mathematics and Mechanics, St. Petersburg State University, 198504 St. Petersburg, Russia

<sup>3</sup>Department of Applied Mathematics and Statistics and Center for Developmental Genetics, State University of New York, Stony Brook, NY 11794, USA

Received 19 May 2008; Accepted 26 June 2008

Academic Editor: Andreas Jakobsson

### Abstract

We present investigation of gene expression profiles by means of singular spectrum analysis (SSA). The biological problem under investigation is the decomposition of *bicoid* protein profiles of *Drosophila melanogaster* into the sum of a signal and noise, where the former consists of an exponential-in-distance pattern and is close to constant nonspecific component, or "background." The signal processing problems addressed are (i) trend extraction from a noisy signal, (ii) batch processing of similar data, and (iii) analytical approximation of the signal components by the sum of exponential and constant-like functions. The proposed methods are evaluated on the given 17 series.

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