

EMPIRIC MODE DECOMPOSITION ALGORITHMS AND ANALYSIS AS ALTERNATIVE STUDY OF STOCHASTIC NONLINEAR PROCESSES

Erarda Vuka¹, Sander Kovaci², Dode Prenga³

¹University of Tirana, Faculty of Natural Sciences, Department of Informatics,
Tirana, Albania, Email: erardavuka@yahoo.com

²Polytechnic University of Tirana, Department of Mathematical Engineering,
Tirana, Albania, Email: s_kovaci@yahoo.com

³University of Tirana, Faculty of Natural Sciences, Department of Physics,
Tirana, Albania, Email: dode.prenga@fshn.edu.al

Abstract

We consider herein the analysis of time series using an ad-hoc algorithm based on Empiric Mode Decomposition. As no long as robust theoretical treatment for EMD based techniques is provided till now, we follow the efforts of many scholars and researchers for possible improvement of the methods. Here we propose to find a better parameterization using Tsallis statistics, and hence a more solid approach will be provided in physical analysis of intrinsic modes. Accordingly, some real signals are analyzed and interpreted so far. Depending on the specific of each one, analytic and real signals were considered under this approach.

Keywords: *nonlinear processes, time series analysis, empiric modes decomposition, hydrology*