

APPLICATION OF AUTOREGRESSIVE MODELLING FOR THE ANALYSIS OF CLINICAL AND OTHER BIOLOGICAL DATA

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Abstract. This paper deals with the application of autoregressive (AR) modelling for the analysis of biological data including clinical laboratory data. In the first part of the paper, we discuss the necessity of feedback analysis in the field of biochemistry. In order to enable this, relative power contribution analysis was introduced. Next, we utilized the two types of impulse response curves of the open and closed loop systems for elucidating the structure of the metabolic networks under study. Time series data obtained from 31 chronic hemodialysis patients observed for periods of 3 to 7 years were analyzed by these procedures. The results of the analysis were rather uniform among the patients and suggested the consistency of this approach in identifying the dynamical system of individual patients. An example of data set is included in the paper.

Key words and phrases: AR modelling, feedback analysis, clinical data, biological data, homeostasis in the body.