



ABSTRACT

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1 of 1

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COMPUTATIONAL METHOD FOR DIAGNOSING CARDIOVASCULAR DISEASES WITH PRELIMINARY FILTERING OF MEASUREMENT ERRORS OF CARDIOGRAM PARAMETERS

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Abstract

A computational method for the diagnosis of cardiovascular diseases based on the maximum likelihood method is obtained in the work. The use of the apparatus of nonlinear canonical expansions allowed passing from the multidimensional likelihood function to the product of one-dimensional distribution densities, which allows taking into account an arbitrary number of cardiogram parameters. The main feature of the proposed method is the use of the operation of filtering errors of measurement of the parameters of an cardiogram. The method also makes it possible to fully take into account the stochastic features of cardiograms. A block diagram for calculating the characteristics of the mathematical model of the cardiogram is presented, expressions for the filtering error of measurement errors of the parameters of the cardiogram are obtained. The results of the numerical experiment have confirmed the high efficiency of the method for diagnosing cardiovascular diseases. © 2023 ESM. All Rights Reserved.

Author keywords

canonical expansions; Cardiovascular diseases; random sequences

Indexed keywords

Engineering controlled terms

Cardiology; Computational methods; Diagnosis; Diseases; Maximum likelihood; Measurement errors; Numerical methods; Parameter estimation; Random errors

Engineering uncontrolled terms

Arbitrary number; Canonical expansion; Cardiovascular disease; Distribution density; Filtering error; Likelihood functions; Maximum likelihood methods; Measurements of; One-dimensional; Random sequence

Engineering main heading

Stochastic systems

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