

# THE EXPLORATION OF CHARACTERISTIC PARAMETERS OF PHONOCARDIOGRAM SIGNALS THROUGH THE ANALYSIS OF TIMEFREQUENCY AND SPECTRA USING WAVELET

by sumarna, agus purwanto

## ABSTRACT

The purpose of this research was to find out the type of suitable (proper) wavelet as a tool to analyse the phonocardiogram (PCG) signals and to explore the characteristic parameters of phonocardiogram signals based on the analysis results of time-frequency and spectra using proper wavelet.

The steps of the research consisted of recording the PCG signals of 7 (seven) volunteers using Sound Forge 10 software and saving them as wav files, cutting the signals on the initial and final parts to obtain the sistole and diastole signals manually, and analysing the signals using continuous wavelet (Morlet, Mexican Hat, and Hermitian). Signal analysis was carried out using own-written program by implementing functions in Matlab. The program consisted of computing wavelet coefficients, signal reconstruction, and computing the correlation coefficient of the original signal and the reconstructed signals. The analysis results were shown as the spectra of wavelet coefficients and the correlation coefficient table.

The analysis (the computation of wavelet coefficients) of the PCG signals of 7 (seven) volunteers has been carried out. Analysis results showed that the type of continuous wavelet suitable for analysing PCG signals was Morlet Wavelet which produced consistent and high value correlation coefficients. The research did not diagnose the health status of the volunteers since it was out of the researcher's capabilities

Kata Kunci: *characteristic parameters, phonocardiogram signals, wavelet*