ABSTRACT

Denoising is a method to remove *noise* on ECG signals. The *noise* present in the ECG signal is spread over the same range with the same frequency as the ECG signal, so the usual filter method can not remove the *noise* [2].

In the *denoising* test in this final project, the writer uses a comparison method between *adaptive filter* and *discrete wavelet transform* (DWT). Where the DWT method of *denoising* the signal by using some wavelet base method such as *Haar, Debuchies, Symlet and Bior* and *thresholding with soft or hard thresholding method*. As for *adaptive filter* itself by using the method *KALMAN, Least Mean Square* (LMS), *and Recursive Least Square* (RLS). The experiments were conducted by giving 4 different *noise* like *ADDITIVE WHITE GAUSSIAN NOISE* (AWGN), *MUSCLE ARTIFACT* (MA), *ELEKTRODE MOTION* (EMM) *and BASELINE WANDER* (BW) for each DWT and *adaptive filter* method.

Based on the test results, **the best *denoising* performed by *Discrete Wavelet Transform method* for *Additive White Gaussian Noise* (AWGN) is with Wavelet = DB 12 with Threshold Method = SURE with HARD THRESHOLD and Decomposition Level = 2 with MSE value = 0.000498516 and SNR = 28.12125292 dB.** While for **best *denoising* done by *adaptive filter* method for *Additive White Gaussian Noise* (AWGN) is by *LMS* method with value of MSE = 0.000273995 and SNR = 30.68395146 dB.** When compared from the above results then the best method is shown by adaptive filter method.

Key words: Electrocardiogram (ECG), Denoising, Discrete wavelet Transform (DWT), adaptive filters.