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Extracting Fetal Electro Cardiogram Signal to Monitor Congenital Heart Problems Using Framelet

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ABSTRACT Gynecologists are interested in measuring the Fetal Electro Cardiogram (FECG) signal since it provides reliable information about the fetal status, the detection of abnormalities and to detect whether the fetus is alive or dead. Non-invasive technique is preferred for this to avoid the breaking up of the membrane which protects the child. The problems associated with the non-invasive interaction are mainly due to the low power of FECG signal which is contaminated by various sources of interference. The proper checking of fetal heart and the prior recognition of cardiac problems make heart specialist to recommend proper medication in that moment or to take the essential safety measures during delivery or after labor. The enduring look of mother's ECG signal in which the amplitude is 5-20 times more than that of FECG is considered to be a maddening one. A new method for filtering FECG from Abdominal ECG (AECG) is proposed. In the midst of the several noises that taint FECG, the noise which is needed to be eliminated is the mother's noise generated in the abdomen. The current work aims to get rid of the mother's ECG signal (MECG) and to extract a perfect FECG. The performance of the proposed method is evaluated by Mean Square Error (MSE) and Peak Signal to noise ratio (PSNR). The result shows that the Framelet Transform (FT) produces minimum MSE and high Peak Signal to Noise Ratio (PSNR) than Discrete Wavelet Transform (DWT).