

## WAVELET APPROACH FOR SKIN TISSUE IN-VIVO ANALISYS

B. Gambin (Warsaw, Poland), O. Doubrovina (Minsk, Belarus)

J. Litniewski (Warsaw, Poland), H. Piotrkowska (Warsaw, Poland)

The practical aim of this research is to distinguish the ultrasound echo signal analysis of two human skin samples: one is usual (healthy) and another is from that part where some kind of pathological changes had been diagnosed.

In [1-2] a method using statistical analysis of the envelope model was proposed.

The main idea of this investigation was to extrapolate method of wavelets analysis of fetal heart-rate signals used in [3] to the data obtained during in-vivo human dermis experiments.

We assume the hole dataset of 200 arrays each of them consists of 2048 points and perform them using Daubechies 6 wavelets [4]. After that the statistical characteristics of 6-level decompositions have been analyzed.

**Acknowledgement.** The authors would like to convey thanks to the Belarussian State University in Minsk and to the Institute of Fundamental Technological Research in Warsaw providing the financial means of scientific cooperation.

### References

1. *Piotrkowska H., Litniewski J., Szymańska E., Nowicki A.* Ultrasonic Echosignal Applied to Human Skin Lesions Characterization. J. Archives of acoustic **37**, 1, 2012, p. 103–108.
2. *Piotrkowska H., Litniewski J., Szymańska E., Lewandowski M., Nowicki A.* Statistics of envelope of high frequency ultrasound signal backscattered in human dermis. J. Hydroacoustic, **13**, 2010, p. 205–214.
3. *Cattani C., Doubrovina O., Rogosin S., Voskresensky S.L., Zelianko E.* On creation of a new diagnostic model for fetal well-being on the base of wavelet analysis of cardiotocograms. J. Med. Systems Vol. **30**, Springer, 2006, p. 489–494.
4. *Daubechies I.* Ten Lectures on Wavelets. Philadelphia: SIAM, 1992.