

RESUMO N° 211

## THE CORRECTION OF THE VESTIBULAR SYSTEM INERTIAL BIOSENSORS

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A mathematical model of the primary afferent neuron activity of the vestibular apparatus, which is the output signal of the vestibular inertial biosensor is presented. The model is based on experimental data from recordings in isolated vestibular neurons. Deterministic and stochastic analysis of our model has been done. Using this model, it might be possible, using galvanic stimulation of low amplitude applied to periauricular region, to correct the output from the vestibular apparatus. This galvanic stimulation should take place against a

background of Gaussian white noise with optimal intensity. Computer analysis has shown that the formation of stochastic resonance makes galvanic stimulation more effective. Our model can process the corrective signal of the vestibular output in various conditions. An algorithm for the correction using galvanic stimulation is

presented. This algorithm can be used to help stabilize the upright posture in extreme situations and to assist in situations where a delay of gaze stabilization may occur.