

## Modeling of Bioelectric Activity of Nerve Cells Using Bond Graph Method

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**Abstract :** Bioelectric activity of nervous cells might be changed causing by various factors. This alteration can lead to unforeseen circumstances in other organs of the body. Therefore, the purpose of this study was to model a single neuron and its behavior under an initial stimulation. This study was developed based on cable theory by means of the Bond Graph method. The numerical values of the parameters were derived from empirical studies of cellular electrophysiology experiments. Initial excitation was applied through square current functions, and the resulted action potential was estimated along the neuron. The results revealed that the model was developed in this research adapted with the results of experimental studies and demonstrated the electrical behavior of nervous cells properly.

**Keywords :** bond graph, stimulation, nervous cells, modeling

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