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Theory of the locomotion of nematodes: Control of the somatic motor neurons by interneurons. (In English)

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The only animal of which the complete neural circuitry is known at the sub-microscopical level is the nematode *Caenorhabditis elegans*. This anatomical knowledge is complemented by functional insight from electrophysiological experiments in the related nematode *Ascaris lumbricoides*, which show that *Ascaris* motor neurons transmit signals electrotonically and not with unattenuated spikes. We developed a mathematical model for electrotonic neural networks and applied it to the motor nervous system of nematodes. This enabled us to reproduce experimental results in *Ascaris* quantitatively.

Classification:

92C20 Neural biology

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neural network equations; neural circuitry; *Ascaris lumbricoides*; electrotonic neural networks; motor nervous system of nematodes