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Method for constructing the boundary of the bursting oscillations region in the neuron model. (English) [Zbl 0968.92002](#)

Biol. Cybern. 82, No. 6, 493-497 (2000).

Summary: We examine the problem of constructing the boundary of bursting oscillations on a parameter plane for a system of equations describing the electrical behaviour of the membrane neuron arising from the interaction of fast oscillations of the cytoplasmic membrane potential and slow oscillations of the intracellular calcium concentration. As the boundary point on the parameter plane we consider the values at which the limit cycle of the slow subsystem is tangent to the Hopf bifurcation curve of the fast subsystem.

The method suggested for determining the boundary is based on the dissection of the system variables into slow and fast. The strong point of the method is that it requires the integration of the slow subsystem only. An example of the application of the method for the stomatogastric neuron model [*J. Guckenheimer, S. Gueron and R.M. Harris-Warrick, Philos. Trans. R. Soc. Lond., Ser. B 341, 345-359 (1993)*] is given.

MSC:

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37N25 Dynamical systems in biology

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