

**Dikansky, Arnold**

**Fitzhugh-Nagumo equations in a nonhomogeneous medium.** (English) Zbl 1162.35393

Discrete Contin. Dyn. Syst. 2005, Suppl., 216-224 (2005).

Summary: We investigate various propagation phenomena for the FitzHugh-Nagumo system

$$\begin{cases} u_t = Du_{xx} + u(1-u)(u-a(x)) - v, \\ v_t = \varepsilon(gu - bv - d), \\ u(x, 0) = u_0(x), \\ v(x, 0) = v_0(x), \\ u_x(0, t) = u_x(L, t) = 0. \end{cases}$$

with a nonhomogeneous threshold function  $a(x)$ . It is studied over a range of values  $b, d, \varepsilon$  and function  $a(x)$ . Numerical simulations of system show that the system exhibits different patterns of behavior and they significantly differ from those in a homogeneous medium.

**MSC:**

[35K57](#) Reaction-diffusion equations

[37N25](#) Dynamical systems in biology

[47N20](#) Applications of operator theory to differential and integral equations

Cited in **5** Documents

**Keywords:**

reaction-diffusion; Fitzhugh-Nagumo; nonhomogeneous threshold function

**Software:**

CWRESU; CWRESX; Algorithm 731