1083-35-33   **Robert Stephen Cantrell** and **Chris Cosner*** (`gcc@math.miami.edu`), Department of Mathematics, University of Miami, Coral Gables, FL 33124, and **Raul Manasevich**. *Global bifurcation of solutions for crime modeling equations.*

We use global bifurcation theory to show pattern formation in a quasilinear system of two elliptic equations that has been developed by Short et al. [2] as a model for residential burglary. That model is based on the observation that the rate of burglaries of houses that have been burglarized recently and their close neighbors is typically higher than the average rate in the larger community, which creates patterns of "hotspots" for burglary. The analysis is based on recent results on global bifurcation in quasilinear elliptic systems derived by Shi and Wang [1]. We show in some cases that near the bifurcation point the bifurcating spatial patterns are stable.

[1]. J. Shi and X. Wang. On global bifurcation for quasilinear elliptic systems on bounded domains, Journal of Differential Equations, v.7 (2009), 2788-2812.

[2]. M.B. Short, M.R D'Orsogna, V.B. Pasour, G.E. Tita, P.J. Brantingham, A.L. Bertozzi and L.B. Chayes. A Statistical model of criminal behavior, Math Models and Methods in Applied Sciences, v.18 (2008), 1249-1267.

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