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1003-92-1638 **Josef Hofbauer** and **Sebastian J. Schreiber*** (sjschr@wm.edu), Department of Mathematics,
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Ecological equations $\dot{x}_i = x_i f_i(x)$ on the non-negative cone on \mathbf{R}^n are often used to describe the dynamics of n interacting species. Long-term coexistence of the species can be equated with permanence (or uniform persistence) in which the boundary of the non-negative cone is repelling. We construct an open set of ecological equations for which permanence is effectively undecidable. For any ecological equation in this set, there are arbitrarily small perturbations of the f_i that result in a permanent equation and other arbitrarily small perturbations of f_i that result in an ecological equation with an attractor on the boundary of the non-negative cone. (Received October 05, 2004)