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**Georg Hetzer, Wenxian Shen and Tung Nguyen\*** (nguyet4@auburn.edu), Auburn University, Department of Mathematics, Roosevelt Dr. Parker Hall, Auburn, AL 36849. *Attractor Stability via Morse-Smale Property for Diffusive Two-Species Competition Systems*. Preliminary report.

A diffusive two-species competition system is called Morse-Smale, iff its solution semi-flow (on a suitable positive cone) satisfies: There are only finitely many critical elements (fixed points or periodic orbits) all of which are hyperbolic, and the global unstable manifold  $W^u(\alpha)$  of a critical element  $\alpha$  and the local stable manifold  $W_{loc}^s(\alpha')$  of a critical element  $\alpha'$  either do not intersect or they intersect transversally (i.e.  $x \in W^u(\alpha) \cap W_{loc}^s(\alpha')$  implies  $T_x W^u(\alpha) \oplus T_x W_{loc}^s(\alpha') = T_x X$ ). Our main result states for the spatially one-dimensional case that a Morse-Smale diffusive two-species competition system is structurally attractor-stable. The proof relies on a reduction to ode-systems by means of inertial manifolds and an adaptation of the proof of the celebrated Palis-Smale theorem. As an application, the analysis of numerical approximation schemes of the attractors of such systems is intended. (Received September 27, 2005)