1044-35-106 **Georg Hetzer*** (hetzege@auburn.edu), Department of Mathematics and Statistics, 304 Parker Hall, Auburn University, AL 36849-5310. *Trajectory Attractors for a Class of Functional Reaction-Diffusion Problems.* Preliminary report.

Of concern is the existence of a trajectory attractor for a reaction-diffusion problem

$$\begin{cases} c(x)\partial_t u - \nabla \cdot [k(x)\,|\nabla u|^{p-2}\,\nabla u] + g(u, V(u|_{[0,\infty)})) \\ \qquad\qquad \in F(t, x, u, \overline{u}, V(u|_{[0,\infty)})) \qquad t > 0,\ x \in M, \\ \overline{u}(t,x) := \int_{-T}^{0} \beta(s,x) u(t+s,x)\,ds,\ t > 0,\ x \in M, \\ u(s,x) = u_0(s,x), \qquad\qquad -T \le s \le 0, x \in M, \end{cases}$$

which arises from an energy balance climate model with bio-feedback. One is interested in nonnegative solutions $u = u(t,x)$ (temperature in Kelvin). $M$ is a closed, compact, oriented Riemannian surface representing the Earth's surface, the positive functions $c$ and $k$ represent the thermal inertia and the diffusivity of the system, respectively, $p \ge 2$, $F$ stands for the absorbed solar radiation flux, and $g$ represents the emitted terrestrial radiation flux. $V$ accounts for the bio-sphere and is in particular continuous and has the Volterra property. (Received August 25, 2008)