

**EXPONENTIAL ATTRACTORS FOR SELF-REGULATING  
HOMEOSTASIS MODEL ON A SPHERE**

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**ABSTRACT.** This paper is devoted to studying a complete two-dimensional Daisyworld model on a sphere. The Daisyworld model which has been originally introduced by Andrew Watson and James Lovelock (1983) describes the process of planetary self-regulating homeostasis by a biota and its environment. After formulating our two-dimensional model, we construct global solutions, dynamical systems and exponential attractors. We also show some numerical results suggesting pattern formation of stripe segregation.

*Key words and phrases.* Reaction-diffusion equations on a sphere, Exponential attractor, Daisyworld model.