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PATTERN FORMATION FOR SELF -REGULATING HOMEOSTASIS MODEL IN A RECTANGLE

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Abstract. We continue the study on two-dimensional self-regulating homeostasis models. In the previous paper [4], after introducing a homeostasis model on a sphere, we showed global existence of solutions and constructed exponential attractors for the dynamical system generated by the model. We furthermore showed by numerical computations that white daisy and black daisy perform very clear segregation patterns on the sphere.

This paper is then devoted to investigating more on this pattern formation in a rectangular domain. We show that the competition of white and black daisies and the interaction with temperature create several types of segregation patterns and bring homeostasis of the global temperature to the planet.

Key words and phrases. Reaction-diffusion equations, Pattern formation, Daisyworld model.