EXPONENTIAL ATTRACTORS FOR A CONSERVED PHASE-FIELD SYSTEM WITH MEMORY

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ABSTRACT. We consider a conserved phase-field system of Caginalp type, characterized by the assumption that both the internal energy and the heat flux depend on the past history of the temperature and its gradient, respectively. The model consists of a parabolic integrodifferential equation, coupled with a fourth-order evolution equation for the phase-field. This system, supplemented with suitable boundary conditions, can be interpreted as a dissipative dynamical system in a proper phase-space. In a previous joint work, the last two authors have proved the existence of a global attractor of finite fractal dimension. Here we show the existence of an exponential attractor, by means of the techniques we developed for nonconserved phase-field systems with memory.