

**WEAK EXPONENTIAL ATTRACTORS
FOR COLEMAN–GURTIN EQUATIONS
WITH DYNAMIC BOUNDARY CONDITIONS
POSSESSING DIFFERENT MEMORY KERNELS**

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ABSTRACT. The well-posedness of a generalized Coleman–Gurtin equation equipped with dynamic boundary conditions with memory was recently established by C.G. Gal and the author. Additionally, it was established by the author that the problem admits a finite dimensional global attractor and a robust family of exponential attractors in the case where singularly perturbed memory kernels defined on the interior of the domain and on the boundary of the domain coincide. In the present article we report advances concerning the asymptotic behavior of this heat transfer model when the memory kernels do *not* coincide. In this setting we obtain a weak exponential attractor whose basin of attraction is the entire phase space, that is, a finite dimensional exponentially attracting compact set in the weak topology of the phase space. This result completes an analysis of the finite dimensional attractors for the generalized Coleman–Gurtin equation equipped with dynamic boundary conditions with memory.

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