

# FINITE TIME BLOW-UP OF PARABOLIC SYSTEMS WITH NONLOCAL TERMS

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ABSTRACT. In this paper, we study the blow-up phenomena for a class of parabolic systems with nonlocal terms, called *shadow systems* which are often used to approximate reaction-diffusion systems when one of the diffusion rates is large. Existence of finite blow-up solutions are characterized based on the parameters in the shadow systems. Two different approaches are employed to overcome the difficulties caused by the appearance of nonlocal terms and the lack of comparison principles. One is based on integral estimates, while the other relies on the Schauder Fixed Point Theorem. This is a continuation of the work [?]. In particular, we improve the earlier results concerning blow-up solutions to the optimal case.

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1991 *Mathematics Subject Classification.* Primary: 35B44, 35K57; Secondary: 35B30, 35K51.  
*Key words and phrases.* shadow system, blow-up, nonlocal.