

Gevrey regularity and analyticity for Camassa-Holm type systems

WEI LUO AND ZHAOYANG YIN

Abstract. In this paper we mainly investigate the Cauchy problem of Camassa-Holm type systems. By constructing a new auxiliary function, we present a generalized Ovsyannikov theorem. By using this theorem and the basic properties of Sobolev-Gevrey spaces, we prove the Gevrey regularity and analyticity of these systems. Moreover, we obtain a lower bound of the lifespan and the continuity of the data-to-solution map.

Mathematics Subject Classification (2010): 35Q53 (primary); 35B30, 35B44, 35C07, 35G25 (secondary).