1086-76-2623 **Sanja V Pantić*** (pantic@math.uic.edu), MSCS Department, 322 Science and Engineering Offices (M/C 249), 851 S. Morgan Street, Chicago, IL 60607-7045, and **Jerry L Bona**. *Global well-posedness for the eBBM-model.*

The BBM-equation, was first studied as a model for small-amplitude long waves that propagate on the free surface of a perfect fluid. As an alternative to the KdV-equation, it features a balance between nonlinear and frequency-dispersive term that allow existence of traveling waves that are smooth and symmetric about their peak. Such waves, that decay rapidly to zero on their outskirts are known as solitary waves. Our interest is in such solitary-wave solutions of one of the natural generalizations of the BBM-equation, the Extended BBM (eBBM)-equation

$$u_t + u_x + \beta_p(u^p)_x + \beta_q(u^q)_x - u_{xxt} = .,$$

These equations feature a balance between three terms two nonlinear terms $(u^p)_x$ and $(u^q)_x$ and the dispersive term $-u_{xxt}$. Our interest is particularly in powers p and q for which $p < 5 < q$.

We show that the initial-value problem for the eBBM-equation is globally well-possed on the real line and in the periodic setting. This gives a rigorous foundation from which to study the stability theory of its solitary-wave solutions. We then present some numerical simulations concerning the deportment of solitary waves under perturbations. Applications of the discovery of the two separate stable regimes that the eBBM-model features will be discussed. (Received September 25, 2012)