1016-35-54   **Zhijun Qiao***, 1201 W Univ Dr., Edinburg, TX 78541. *A new integrable equation with multi-peaks solitons and tiny solitons.* Preliminary report.

In this paper, we propose a new completely integrable wave equation: $m_t + m_x(u^2 - u_x^2) + 2m^2 u_x = 0, \; m = u - u_{xx}$. The equation is proven to have Lax pair and bi-Hamiltonian structures. This equa- tion possesses new peaked solitons instead of regular peakons $ce^{-|x-ct|}$ with speed c. Through investigating the equation, we develop a new kind of soliton solutions "W or M"-like multi-peaks solitons. Moreover, to our surprise, our new equation has tiny peaked solitary solutions, which are with very weeny amplitude. (Received January 23, 2006)