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Guoping Zhang* (gzhang@desu.edu), 908 Woodcrest Drive, APT 2-1, Dover, DE 19904, and
Zhijun Qiao and **Fengshan Liu**. *New Traveling Wave Solutions for Camassa-Holm
Equation*. Preliminary report.

This paper gives an approach to obtain explicit solutions of the Camassa-Holm (CH) equation $m_t + m_x u + 2m u_x = 0$, $m = u - \alpha^2 u_{xx}$ under the boundary condition $u \rightarrow A$ (A is a constant) as $x \rightarrow \pm\infty$. All possible new single soliton solutions of the CH equation are obtained both in explicit and implicit form. In particular, regular peakon solutions of the CH equation correspond to the case of $A = 0$. The most interesting case is $A \neq 0$ where smooth soliton solutions and new peakon solutions are tremendously obtained in our paper. Mathematical analysis and numeric graphs are provided for those smooth soliton and peakon solutions. (Received August 26, 2005)