# Folded Solitary Waves and Foldons in the (2+1)-Dimensional Long Dispersive Wave Equation

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By means of the Bäcklund transformation, a quite general variable separation solution of the (2+1)-dimensional long dispersive wave equation: $\lambda q_t + q_{xx} - 2q \int (qr)_x \mathrm{d}y = 0$, $\lambda r_t - r_{xx} + 2r \int (qr)_x \mathrm{d}y = 0$, is derived. In addition to some types of the usual localized structures such as dromion, lumps, ring soliton and oscillated dromion, breathers soliton, fractal-dromion, peakon, compacton, fractal and chaotic soliton structures can be constructed by selecting the arbitrary single valued functions appropriately, a new class of localized coherent structures, that is the folded solitary waves and foldons, in this system are found by selecting appropriate multi-valued functions. These structures exhibit interesting novel features not found in one-dimensions. – PACS: 03.40.Kf., 02.30.Jr, 03.65.Ge.

*Key words:* Variable Separation Solution; the (2+1)-dimensional Long Dispersive Wave System;
  Folded Solitary Wave; Foldon.