Analytic Solitary-wave Solutions for Modified Korteweg - de Vries Equation with *t*-dependent Coefficients

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   We find analytic solitary wave solutions for a modified KdV equation with t-dependent coefficients of the form $u_t - 6\alpha(t)uu_x + \beta(t)u_{xxx} - 6\gamma u^2 u_x = 0$. We make use of both the application of the truncated Painlevé expansion and symbolic computation to obtain an auto-Bäcklund transformation. We show that kink-type analytic solitary-wave solutions exist under some constraints on $\alpha(t)$, $\beta(t)$ and γ.

Key words: Variable-coefficient Modified KdV Equation; Truncated Painlevé Expansion; Bäcklund Transformation; Analytic Solitary-wave Solutions.