

## Solitary Wave in Linear ODE with Variable Coefficients

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**Abstract:** In this paper, the linear ordinary differential equations with variable coefficients are obtained from the controlling equations satisfied by wavelet transform or atmospheric internal gravity waves, and these linear equations can be further transformed into Weber equations. From Weber equations, the homoclinic orbit solutions can be derived, so the solitary wave solutions to linear equations with variable coefficients are obtained.

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**Key words:** solitary waves, Weber equation, homoclinic orbit, linear equation, negative resilience

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