

# Abstract

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## **New solutions for solving Boussinesq equation via potential symmetries method**

This work deals with the Boussinesq equation that describes the propagation of the solitary waves with small amplitude on the surface of shallow water. Firstly, the equation is written in a conserved form, a potential function is then assumed reducing it to a system of partial differential equations. The Lie-group method has been applied for determining symmetry reductions of the system of partial differential equations. The solution of the problem by means of Lie-group method reduces the number of independent variables in the given partial differential equation by one leading to nonlinear ordinary differential equations. The resulting non-linear ordinary differential equations are then solved numerically using MATLAB package.