

## Necessary and Sufficient Conditions for Finite Time Blow up of the Solutions to Boussinesq Equation

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Necessary and sufficient conditions for finite time blow up or global existence of the solutions to the Cauchy problem for the generalized Boussinesq equation are proved. Combined power type nonlinearities, including the quadratic–cubic nonlinearity, are considered. Easy checkable sufficient conditions for finite time blow up of the solutions are derived. Additionally, initial data with arbitrary positive energy which satisfy the sufficient conditions are explicitly constructed.

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