

**Existence of Global Solutions for a Multidimensional Boussinesq-Type Equation with
Supercritical Initial Energy**

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Abstract

In this work, global weak solutions of the multidimensional Boussinesq-type equation with power type nonlinearity $\gamma|u|^p$ and supercritical initial energy is given by potential well method. Classical energy methods can not guarantee the global existence for this type of nonlinearity. As is known the functional defined for potential well method includes only the initial displacement, and by use of sign invariance of this functional one can only prove the global existence for critical and subcritical initial energy. In the case of supercritical initial energy such a functional fails to prove the global existence. A new functional is defined, which contains not only initial displacement, but also initial velocity.

References

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