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Mechanical balance laws for a class of Boussinesq systems

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In this talk, the focus will be on a family of Boussinesq systems which can be used for modeling small-amplitude long-crested waves in shallow water [3]. It will be shown how the reconstruction of the velocity field from the principal dependent variables of these equations yields information about important physical quantities of the associated fluid flow [2]. Attention is then given to the study of bores in open channel flows, and it is shown how the above technique may be used to understand energy conservation properties in undular bores [1].

References

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[3] J.L. Bona, M. Chen and J.-C. Saut, *Boussinesq equations and other systems for small-amplitude long waves in nonlinear dispersive media. I: Derivation and linear theory*, J. Nonlinear Sci. **12** (2002), 283–318.