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On the convergence rates for the three-dimensional filtered Boussinesq equations

In this talk we consider a LES-turbulence model for the approximation of large scales of the 3D Boussinesq equations. We analyze the convergence rate, in appropriate norms, of the unique regular weak solution of the regularized Boussinesq equations towards a weak solution of the original Boussinesq system. In so doing we first estimate the difference between the weak solution of the original system and that of the regularized one, the so-called approximation error, in terms of consistency errors. These errors arise from the approximation scheme when inserted into the original system. In particular we give appropriate bounds on the model's consistency errors following some recent results on this topic.

The talk is based on a jointly written paper with Davide Catania.