

Leithold L. Aurazo-Alvarez
IMECC - Department of Mathematics,
University of Campinas (UNICAMP), SP, Brazil
Email: aurazoall@gmail.com

Title: A rescaled approach for the 3D-Boussinesq system
in critical Fourier -Besov spaces

Abstract: In this work we prove a global well-posedness result for a tridimensional rescaled Boussinesq system, with positive full viscosity and diffusivity parameters, in the framework of critical Fourier-Besov spaces, which allow homogeneous functions with negative degree. The rescaled approach implies to rescale both the velocity, dividing by a positive parameter, and the temperature, dividing by the square of the same parameter, and study the obtained system. This rescaled approach permits to deal with the right hand linear term for the Boussinesq system, in order to apply a fixed point lemma, and to know a qualitative behaviour of the system, according to relations between both the parameters and the initial velocity and temperature; for instance, it is possible to consider, for small enough viscosity and large diffusivity, a large enough critical Fourier-Besov norm for the initial temperature and it is also possible to consider, for small enough diffusivity and large viscosity, a large enough critical Fourier-Besov norm for both the velocity and the temperature.

Keywords: Well-posedness; Rescaled Boussinesq system; Critical spaces; Fourier-Besov spaces; Large initial data