

# Shape sensitivity analysis of Incompressible Maxwell-Boussinesq problem

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## Abstract

We deal with the Boussinesq approximation to the Fourier-Navier-Stokes flows under the electromagnetic field, what we call as *the Maxwell- Boussinesq approximation*. We prove the existence and uniqueness of weak solution to the correspondent variational formulation of the problem under study. Some regularity in  $W^{1,2+\delta}$  (for some  $\delta > 0$ ) is presented. The shape sensitivity analysis is studied. Finally we prove the material derivative of weak solution of the problem.

## References:

L. Consiglieri, Š. Nečasová, J. Sokolowski: Incompressible Maxwell-Boussinesq approximation: Existence, uniqueness and shape sensitivity, Preprint 2008