

TEMPLE UNIVERSITY

Department of Mathematics

Analysis Seminar

Room 617 Wachman Hall

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Voigt Boussinesq Equations

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Abstract: The Boussinesq equations are a member of a family of models of incompressible fluid equations, including the 3D Euler equations, for which the problem of global existence of solutions is open. The Boussinesq equations arise in fluid mechanics, in connection to thermal convection and they are extensively studied in that context. Formation of finite time singularities from smooth initial data in ideal (conservative) 2D Boussinesq equations is an important open problem, related to the blow up of solutions in 3D Euler equations. The Voigt Boussinesq is a conservative approximation of the Boussinesq equations which has certain attractive features, including sharing the same steady solutions with the Boussinesq equations. In this talk, after giving a brief description of issues of local and global existence, well-posedness and approximation in the incompressible fluids equations, I will present a global regularity result for critical Voigt Boussinesq equations.