CHRIST
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Notice for the PhD Viva Voce Examination

Ms Maria Anncy S (Reg. No. 1540086), PhD scholar at CHRIST (Deemed to be University), will defend her PhD thesis at the public viva voce examination on Wednesday, 4 August, 2021 at 11.00 am. The defense will be conducted online on the WebEx Meeting platform.

Title of the Thesis	:	**Study of Linear and Non-Linear Analyses of Rayleigh-Bénard-Chandrasekhar Convection in Micropolar Fluid with Saturated Porous Medium**
Discipline	:	**Mathematics**
External Examiner (Outside Karnataka)	:	**Dr Jagadeesh Kumar M S** Associate Professor Department of Mathematics School of Advanced Sciences VIT University Vellore – 632014 Tamil Nadu
External Examiner (Within Karnataka)	:	**Dr Annamma Abraham** Professor Department of Mathematics BMS Institute of Technology PB No. 6443, Avalahalli, Yelahanka Bengaluru – 560064 Karnataka
Supervisor	:	**Dr T V Joseph** Professor Department of Mathematics School of Sciences CHRIST (Deemed to be University) Bengaluru – 560029 Karnataka
Co-Supervisor	:	**Dr Pranesh S** Professor Department of Mathematics School of Sciences CHRIST (Deemed to be University) Bengaluru – 560029 Karnataka

The faculty members of the Department and the School, interested experts and research scholars of all the branches of research are cordially invited to attend this open viva.

Registrar

Place: Bengaluru
Date: 29 July 2021

ABSTRACT

Thermal instability of Chandrasekhar convection in a micropolar fluid, saturated porous layer is being investigated in this study. The model is confined between two horizontal plates of infinite length and separated by a fixed distance. A uniform temperature gradient is provided at the lower plate, while the upper plate is cooled. The study is analysed for both linear as well as non-linear cases to understand the stability, transfer of heat and mass within the model. The study is carried out in extending the model for Rayleigh-Bénard and double diffusive convection with external constraints such as internal heat, concentration source, gravity modulation, temperature modulation, coupled cross diffusion and throughflow.

It is found that internal Rayleigh number and Darcy number speeds up the onset of instability while the coupling parameter and Chandrasekhar number has a reverse effect. Also, the transfer of mass is more compared to the transfer of heat. Increase in Dufour parameter increases the temperature difference between the diffusion of heat and solute and thereby delays the onset of convection by making the system stable. It is observed from the results that Dufour parameter and Soret parameter have opposite influence on the stability of the problem. It is noted from the result that heat transfer rate is same for both pro-gravity and anti-gravity cases, because of the symmetric nature of the boundaries considered. The result of the study also conveys that sub critical motion occurs during in-phase modulation while the out-phase modulation leads to a more stable system. The detailed outcome of the study is discussed and presented pictorially through graphs.

Keywords: *Chandrasekhar convection, Micropolar Fluid and Porous Medium.*