**Paper No: PU-SOE-MAT- 11**

**Influence of thin baffle and magnetic field on buoyant convection in a vertical annulus**

Pushpa B V, **M. Sankar**, Prasanna B M R, Zailan Siri

Department of Mathematics, School of Engineering, Presidency University, Bangalore-560 064, INDIA

**Abstract**

This paper numerically investigates buoyancy-driven convection in an annular cavity having differently heated cylindrical side walls and a thin baffle attached to the inner cylinder. The annular enclosure is packed with electrically conducting low Prandtl number fluid (Pr = 0.054). Along the radial or axial direction, a magnetic field of uniform intensity is applied. The finite difference method consisting of ADI and SLOR techniques is employed to solve the model equations governing the physical processes. The simulation results are presented through streamlines, isotherms, local, and average Nusselt numbers to illustrate the effects of various parameters. The simulation results explain that the Hartmann number and baffle length restrained the heat transfer rate, while the Rayleigh number and baffle location enhance the rate of heat transfer.

**Keywords:**

Magnetic field Annulus Baffle Finite difference method

**Publication Details:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Journal Name** | **Vol.** | **Month & Year**  | **Page No.** | **Publisher** | **Scimago Ranking** |
| Advances in Fluid Dynamics | NA | July, 2020  | 105-119 | Springer | Q3 |